



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 114353

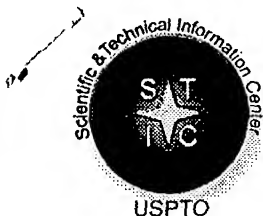
TO: Ling Xu  
Location: REM 5D60  
Art Unit : 1775  
February 18, 2004

Case Serial Number: 10/686663

From: Kathleen Fuller  
Location: EIC 1700  
REMSEN 4B28  
Phone: 571/272-2505  
Kathleen.Fuller@uspto.gov

### Search Notes

No structures were found for the elected species. I used the broad structure in claim 2 to search for compounds used in EL devices.



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

➤ I am an examiner in Workgroup:  Example: 1713

➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: Ling, Yu Examiner #: \_\_\_\_\_ Date: \_\_\_\_\_  
 Art Unit: \_\_\_\_\_ Phone Number 30 \_\_\_\_\_ Serial Number: \_\_\_\_\_  
 Mail Box and Bldg/Room Location: 5060 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

\*\*\*\*\*

**STAFF USE ONLY**

	Type of Search	Vendors and cost where applicable
Searcher: <u>K. Fuller</u>	NA Sequence (#) _____	STN <u>✓</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>2</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>2/18/04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>20</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>80</u>	Other _____	Other (specify) _____

11.1.04

=&gt; FILE REG

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Property values tagged with IC are from the ZIC/VINITI data file  
 provided by InfoChem.

STRUCTURE FILE UPDATES: 17 FEB 2004 HIGHEST RN 651291-85-9  
 DICTIONARY FILE UPDATES: 17 FEB 2004 HIGHEST RN 651291-85-9

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

Please note that search-term pricing does apply when  
 conducting SmartSELECT searches.

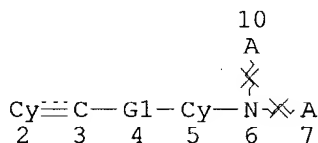
Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more  
 information enter HELP PROP at an arrow prompt in the file or refer  
 to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=&gt; D QUE

L22 7931 SEA FILE=HCAPLUS ABB=ON DEV/RL(L)ELECTROLUMINES?  
 L23 6143 SEA FILE=HCAPLUS ABB=ON DEVICE/IT(L)ELECTROLUMINES?/IT  
 L24 11353 SEA FILE=HCAPLUS ABB=ON L22 OR L23  
 L25 SEL L24 1- RN : 36260 TERMS  
 L26 36249 SEA FILE=REGISTRY ABB=ON L25  
 L27 STR

C=C  
 @8 @9



REP G1=(0-2) 8-3 9-5  
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 NSPEC IS RC AT 7  
 NSPEC IS RC AT 10  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

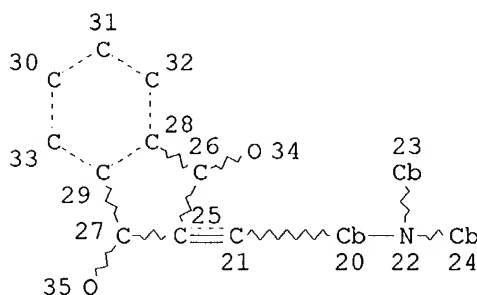
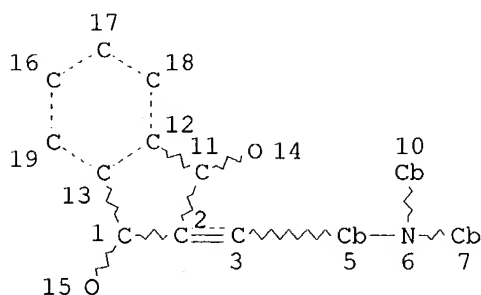
GRAPH ATTRIBUTES:  
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 NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE  
 L29 105 SEA FILE=REGISTRY SUB=L26 SSS FUL L27  
 L34 STR

*Broad structures covers  
 all claims  
 including the  
 elected species  
 105 structures found*



*Subset search  
with  
electro-  
species*



NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 32

STEREO ATTRIBUTES: NONE  
L38 0 SEA FILE=REGISTRY SUB=L29 SSS FUL L34

*zero structures found*

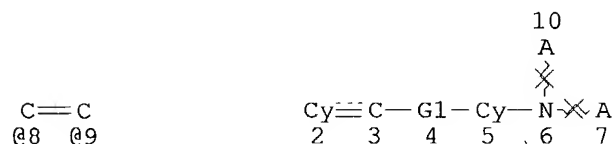
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FILE COVERS 1907 - 18 Feb 2004 VOL 140 ISS 8  
FILE LAST UPDATED: 17 Feb 2004 (20040217/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE L33  
L22 7931 SEA FILE=HCAPLUS ABB=ON DEV/RL(L)ELECTROLUMINES?  
L23 6143 SEA FILE=HCAPLUS ABB=ON DEVICE/IT(L)ELECTROLUMINES?/IT  
L24 11353 SEA FILE=HCAPLUS ABB=ON L22 OR L23  
L25 SEL L24 1- RN : 36260 TERMS  
L26 36249 SEA FILE=REGISTRY ABB=ON L25  
L27 STR



REP G1=(0-2) 8-3 9-5  
 NODE ATTRIBUTES:  
 NSPEC IS RC AT 6  
 NSPEC IS RC AT 7  
 NSPEC IS RC AT 10  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 9

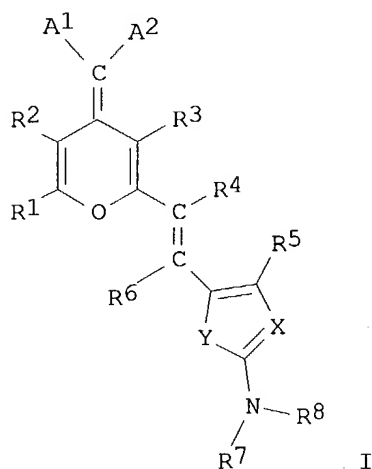
STEREO ATTRIBUTES: NONE  
 L29 105 SEA FILE=REGISTRY SUB=L26 SSS FUL L27  
 L31 6310 SEA FILE=HCAPLUS ABB=ON L29  
 L32 68 SEA FILE=HCAPLUS ABB=ON L31(L) (EL OR ?LUMINESC?)  
 L33 30 SEA FILE=HCAPLUS ABB=ON L32 AND (DEVICE OR DEV/RL)

=> D L33 ALL 1-30 HITSTR

*30 CA references from  
 broader structure claims  
 and utility*

L33 ANSWER 1 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:910423 HCAPLUS  
 DN 139:401347  
 ED Entered STN: 21 Nov 2003  
 TI Organic compounds and red-emitting electroluminescent devices using them  
 as emitters or dopants with high emission efficiency and long-term  
 durability  
 IN Richter, Andreas; Keil, Dietmar; Diener, Gerhard  
 PA Syntec Gesellschaft Fuer Chemie und Technologie, Germany  
 SO Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H05B033-14  
 ICS C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003332077	A2	20031121	JP 2002-246436	20020827
US 2003228486	A1	20031211	US 2002-143556	20020510
PRAI US 2002-143556	A	20020510		
OS MARPAT 139:401347				
GI				



AB The compds. are represented by formula I [R1-12 = H, linear or branched C1-6 alkyl, aralkyl, (un)substituted aryl; R1-R2, R3-R4, R4-R5, R5-R11, R8-R5, and/or R4-R12 may form 5- or 6-membered alicyclic, heterocyclic, or aromatic ring; R6-R7 may form alicyclic or heterocyclic ring; R5 may be OH, OR9, N,N-di(C1-6 alkylamino), acetylamino, halo; A1,2 = CN, NO2, COOR10; X = CH, CR11, N; Y = O, NH, NR12, S, Se; R1-4,8 may be halo]. White-emitting electroluminescent apparatus using (AlQ)3 [tris(8-hydroxyquinolino)aluminum] containing 0.1-1% (0.1-0.8%, preferably) the compds. is also claimed.

ST red emission org compd electroluminescent app; electroluminescent **device** dopant hydroxyquinolinoaluminum emission efficiency; white emission EL **device** under doping

IT Electroluminescent devices  
(red-emitting; organic compds. for red-emitting electroluminescent apparatus with high emission efficiency and long-term stability)

IT Electroluminescent devices  
(white-emitting; organic compds. for red-emitting electroluminescent apparatus with high emission efficiency and long-term stability)

IT 50926-11-9, ITO  
RL: **DEV (Device component use)**; USES (Uses)  
(anode; organic compds. for red-emitting electroluminescent apparatus with high emission efficiency and long-term stability)

IT 553-54-8, Lithium benzoate 7429-90-5, Aluminum, uses 7789-24-4, Lithium fluoride, uses  
RL: **DEV (Device component use)**; USES (Uses)  
(cathode; organic compds. for red-emitting electroluminescent apparatus with high emission efficiency and long-term stability)

IT **451454-85-6 451454-91-4**  
RL: **DEV (Device component use)**; MOA (Modifier or additive use);  
USES (Uses)  
(dopant, light-emitting layer; organic compds. for red-emitting **electroluminescent** apparatus with high emission efficiency and long-term stability)

IT 25067-59-8, Poly(N-vinylcarbazole) 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)benzidine 123847-85-8 185690-39-5, 4,4',4'''-Tris[N-(1-naphthyl)-N-phenylamino]triphenylamine

RL: **DEV (Device component use); USES (Uses)**  
 (hole-transporting layer; organic compds. for red-emitting  
 electroluminescent apparatus with high emission efficiency and long-term  
 stability)

IT 2085-33-8, Alq3

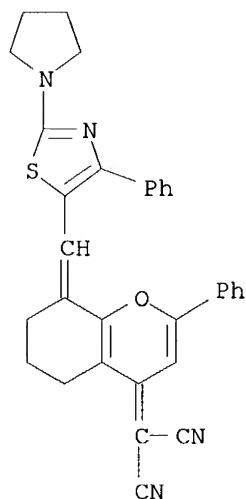
RL: **DEV (Device component use); USES (Uses)**  
 (light-emitting layer; organic compds. for red-emitting electroluminescent  
 apparatus with high emission efficiency and long-term stability)

IT **451454-85-6 451454-91-4**

RL: **DEV (Device component use); MOA (Modifier or additive use);**  
**USES (Uses)**  
 (dopant, light-emitting layer; organic compds. for red-emitting  
**electroluminescent** apparatus with high emission efficiency and  
 long-term stability)

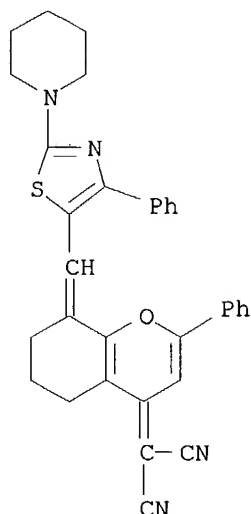
RN 451454-85-6 HCAPLUS

CN Propanedinitrile, [5,6,7,8-tetrahydro-2-phenyl-8-[[4-phenyl-2-(1-  
 pyrrolidinyl)-5-thiazolyl]methylene]-4H-1-benzopyran-4-ylidene]- (9CI)  
 (CA INDEX NAME)

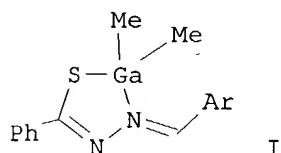


RN 451454-91-4 HCAPLUS

CN Propanedinitrile, [5,6,7,8-tetrahydro-2-phenyl-8-[[4-phenyl-2-(1-  
 piperidinyl)-5-thiazolyl]methylene]-4H-1-benzopyran-4-ylidene]- (9CI) (CA  
 INDEX NAME)



L33 ANSWER 2 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:686836 HCAPLUS  
 DN 139:323584  
 ED Entered STN: 03 Sep 2003  
 TI Synthesis, structural characterization and electroluminescence study of  
 alkylgallium derivatives of thiobenzhydrazones  
 AU Shen, Yingzhong; Gu, Hongwei; Gu, Weijin; Yuan, Fang; Zhu, Yu; Pan, Yi  
 CS School of Chemistry and Chemical Engineering, Department of Chemistry,  
 Nanjing University, Nanjing, 210093, Peop. Rep. China  
 SO Journal of Organometallic Chemistry (2003), 681(1-2), 51-58  
 CODEN: JORCAI; ISSN: 0022-328X  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 CC 29-5 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 73, 75  
 GI



AB Preparation, luminescent and electroluminescent properties of dimethylgallium  
 thiobenzhydrazide complexes are described. Dimethylgallium complexes  
 (1-6, shown as I, Ar = Ph, 4-MeOC<sub>6</sub>H<sub>4</sub>, 3,4-(MeO)<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, 4-Me<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>,  
 2-naphthyl, 9-anthryl) were prepared by reaction of trimethylgallium with  
 appropriate N-arylmethylenethiobenzhydrazides. The complexes were  
 characterized by elemental anal., <sup>1</sup>H-NMR, IR and mass spectroscopy.  
 Structure of 2 (Ar = 4-MeOC<sub>6</sub>H<sub>4</sub>) was determined by x-ray single-crystal anal.;  
 the tetrahedral coordination of gallium was thus confirmed. Compds. 2-4  
 (Ar = 4-MeOC<sub>6</sub>H<sub>4</sub>, 3,4-(MeO)<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, 4-Me<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>) are luminescent in the range

- of  $\lambda_{\text{max}} = 432\text{--}479$  nm when irradiated by UV light. The electroluminescent (EL) properties of 2-4 were examined by fabricating EL devices using the complexes as an emitter. The EL bands are located in the blue region (451, 454 and 479 nm for 2, 3 and 4, resp.).
- ST gallium dimethylgallium thiobenzhydrazide complex prepn luminescence; trimethylgallium demethylation thiobenzhydrazide dimethylgallium complex prepn; luminescence photoluminescence electroluminescence blue dimethylgallium thiobenzhydrazide complex; electroluminescence **device** spectrum thiobenzhydrazide gallium dimethyl complex; crystal structure luminescent thiobenzhydrazide gallium dimethyl complex; mol structure luminescent thiobenzhydrazide gallium dimethyl complex
- IT Luminescence, electroluminescence  
(blue; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)
- IT Crystal structure  
Molecular structure  
(of luminescent dimethylgallium N-(4-methoxyphenylmethylene)thiobenzhydrazide complex)
- IT Demethylation  
(of trimethylgallium by thiobenzhydrazides in preparation of photo- and electroluminescent dimethylgallium complexes)
- IT Group IIIA element compounds  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(organometallic, gallium; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)
- IT Luminescence  
(photoluminescence, blue; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)
- IT Electroluminescent devices  
(preparation and luminescence spectra of dimethylgallium thiobenzhydrazide complexes in indium-tin oxide-aluminum electroluminescence **device**)
- IT Hydrazides  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(thiobenzhydrazides, gallium complexes; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazides)
- IT 42344-81-0 90057-69-5 96793-92-9 98111-03-6, Benzenecarbothioic 4-dimethylaminobenzylidenethydrazide 100146-14-3, Benzenecarbothioic [(2-naphthalenyl)methylene]hydrazide 339117-45-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(complexation; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)
- IT 614733-91-4P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(crystal structure, luminescence spectra; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)
- IT 1445-79-0, Trimethylgallium  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(demethylation; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)
- IT 614733-92-5P **614733-93-6P**  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(**luminescence** spectra; preparation, structure and photo- and **electroluminescent** properties of dimethylgallium

thiobenzhydrazide complexes)

IT 614733-90-3P 614733-94-7P 614733-95-8P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Altomare, A; J Appl Crystallogr 1994, V27, P435
- (2) Ashenhurst, J; Organometallics 1998, V17, P3186 HCAPLUS
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- (5) Brouwer, H; Adv Mater 1996, V8, P935 HCAPLUS
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- (10) Hendershot, D; Organometallics 1991, V10, P3320
- (11) Hironaka, Y; US 5466392 1995 HCAPLUS
- (12) Liu, W; Organometallics 1997, V16, P4257 HCAPLUS
- (13) Ma, D; Chin J Chem 1998, V16, P1 HCAPLUS
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- (15) Molecular Structure Corporation; Crystal Structure Analysis Package 1985
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- (17) Nakamura, N; Chem Lett 1994, P1741
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- (20) Sano, T; US 5432014 1995 HCAPLUS
- (21) Sapochak, L; J Am Chem Soc 2001, V123, P6300 HCAPLUS
- (22) Schumann, H; J Organomet Chem 1987, V9, P326
- (23) Shen, Y; J Organomet Chem 1999, V590, P242 HCAPLUS
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- (27) Tang, C; J Appl Phys 1989, V65, P3610 HCAPLUS
- (28) Thiele, K; J Organomet Chem 1997, V89, P540
- (29) Xu, C; Appl Phys Lett 1999, V75, P1827 HCAPLUS
- (30) Yang, Y; Mater Res Soc Bull 1997, V22, P31 HCAPLUS

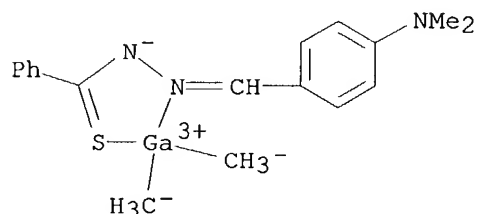
IT 614733-93-6P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(luminescence spectra; preparation, structure and photo- and electroluminescent properties of dimethylgallium thiobenzhydrazide complexes)

RN 614733-93-6 HCAPLUS

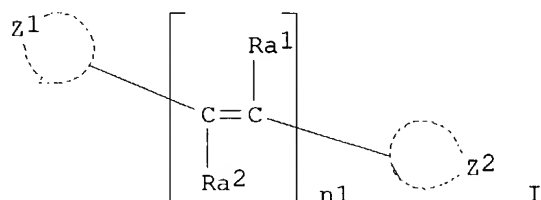
CN Gallium, [(benzenecarbothioic acid-κS) (2Z)-[[4-(dimethylamino)phenyl]methylene]hydrazidato-κN2]dimethyl-, (T-4)-(9CI) (CA INDEX NAME)



L33 ANSWER 3 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:586748 HCAPLUS  
 DN 139:157125  
 ED Entered STN: 31 Jul 2003  
 TI Organic electroluminescent **device** and display with unconjugated ring compound  
 IN Oshiyama, Tomohiro; Yamada, Taketoshi; Kita, Hiroshi; Ueda, Noriko; Matsuura, Mitsunobu  
 PA Konica Co., Japan  
 SO Jpn. Kokai Tokkyo Koho, 30 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H05B033-14  
 ICS C09K011-06; H05B033-12  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003217858	A2	20030731	JP 2002-283069	20020927
PRAI	JP 2001-348391	A	20011114		
OS	MARPAT 139:157125				
GI					



AB The invention refers to an organic electroluminescent **device** comprising the compound I [one of Z1,2 is a(n) (un)substituted 7- to 9-membered non-conjugated ring or 8-membered ring with > 2 heteroatoms; if Z1,2 contains substituents,  $\sigma$  is given by  $-0.9 < \sigma < 0.5$ ; Ra1,2 = H or substituent; n1 < 1].

ST electroluminescent display **device**

IT Electroluminescent devices

(displays; organic electroluminescent **device** and display with unconjugated ring compound)

IT Luminescent screens

(electroluminescent; organic electroluminescent **device** and display with unconjugated ring compound)

IT 569674-85-7 569674-86-8 569674-87-9 569674-88-0 569674-89-1  
 569674-90-4 569674-91-5 **569674-92-6 569674-93-7**  
**569674-94-8** 569674-95-9 569674-96-0 569674-97-1  
 569674-98-2 569674-99-3 569675-00-9 569675-01-0 569675-02-1

RL: DEV (Device component use); USES (Uses)

(organic **electroluminescent device** and display with unconjugated ring compound)

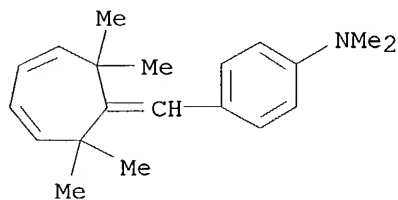
IT **569674-92-6 569674-93-7 569674-94-8**



RL: **DEV (Device component use); USES (Uses)**  
 (organic **electroluminescent device** and display with  
 unconjugated ring compound)

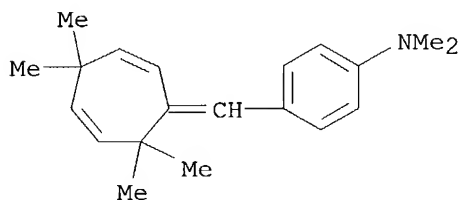
RN 569674-92-6 HCAPLUS

CN Benzenamine, N,N-dimethyl-4-[(2,2,7,7-tetramethyl-3,5-cycloheptadien-1-ylidene)methyl]- (9CI) (CA INDEX NAME)



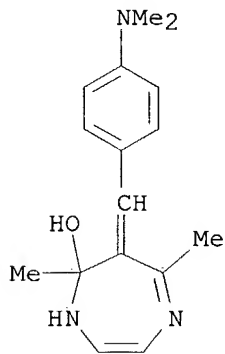
RN 569674-93-7 HCAPLUS

CN Benzenamine, N,N-dimethyl-4-[(4,4,7,7-tetramethyl-2,5-cycloheptadien-1-ylidene)methyl]- (9CI) (CA INDEX NAME)



RN 569674-94-8 HCAPLUS

CN 1H-1,4-Diazepin-7-ol, 6-[[4-(dimethylamino)phenyl]methylene]-6,7-dihydro-5,7-dimethyl- (9CI) (CA INDEX NAME)



L33 ANSWER 4 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:417084 HCAPLUS

DN 139:140644

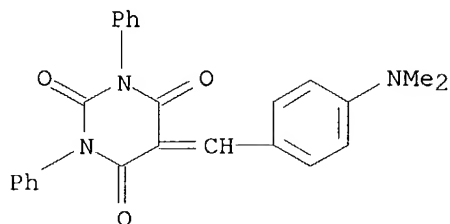
ED Entered STN: 01 Jun 2003

TI Novel barbituric acid derivatives for red electroluminescent materiel

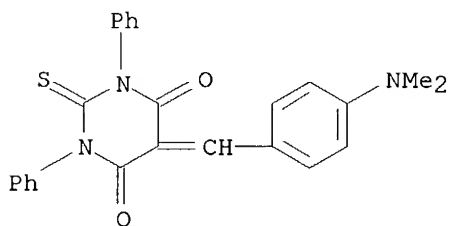
AU Zhu, Weihong; Pan, Xingang; Tian, He

CS Institute of Fine Chemicals, East China University of Science and

Technology, Shanghai, 200237, Peop. Rep. China  
 SO Synthetic Metals (2003), 137(1-3), 1127-1128  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 76  
 AB Two barbituric acid derivs. were synthesized and characterized by 1H-NMR and MS spectra. The photoluminescence (PL) and electroluminescence (EL) properties of these compds. also were studied. The powder PL intensity of 1,3-diphenyl-5-(4-dimethylaminobenzenylidene)-2-thiabarbituric acid (Bar-1) and 5-(4-dimethylamino- benzenylidene)-2-barbituric acid (Bar-2) is relative higher and the wavelength shifts to longer wavelength region of spectrum. Thin film of these compds. made by vacuum deposition exhibited good film quality and conductivity It seems to be hopeful that such high luminescent compds. can be employed as host red light emitting materials in EL devices.  
 ST LED barbiturate deriv red electroluminescence; luminescence barbiturate deriv red LED; fluorescence barbiturate deriv red LED; UV visible spectra barbiturate deriv red LED; mass spectra barbiturate deriv red LED; melting point barbiturate deriv red LED; NMR spectra barbiturate deriv red LED; current potential relation barbiturate deriv red LED  
 IT Electric current-potential relationship  
 (of LEDs from barbituric acid derivs.)  
 IT Electroluminescent devices  
 Fluorescence  
 Luminescence  
 Luminescence, electroluminescence  
 Mass spectra  
 Melting point  
 NMR (nuclear magnetic resonance)  
 UV and visible spectra  
 (of barbituric acid derivs.)  
 IT 2085-33-8, Alq3 65181-78-4, Tpd  
 RL: DEV (Device component use); USES (Uses)  
 (LEDs from barbituric acid derivs. containing)  
 IT 57071-24-6 86872-80-2  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (novel barbituric acid derivs. for red electroluminescent materiel)  
 RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
 (1) Bradley, D; Synth Met 1993, V54, P401 HCAPLUS  
 (2) Chen, C; Thin Solid Films 2000, V363, P327 HCAPLUS  
 (3) Sakakibara, Y; Appl Phys Lett 1999, V74, P2587 HCAPLUS  
 IT 57071-24-6 86872-80-2  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (novel barbituric acid derivs. for red electroluminescent materiel)  
 RN 57071-24-6 HCAPLUS  
 CN 2,4,6(1H,3H,5H)-Pyrimidinetrione, 5-[[4-(dimethylamino)phenyl]methylene]-1,3-diphenyl- (9CI) (CA INDEX NAME)

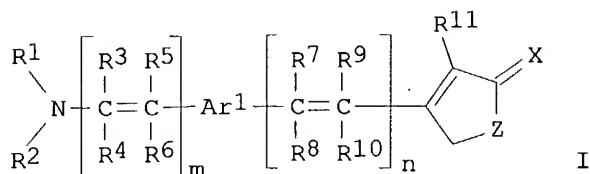


RN 86872-80-2 HCAPLUS  
 CN 4,6(1H,5H)-Pyrimidinedione, 5-[[4-(dimethylamino)phenyl]methylene]dihydro-1,3-diphenyl-2-thioxo- (9CI) (CA INDEX NAME)



L33 ANSWER 5 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:14424 HCAPLUS  
 DN 138:80453  
 ED Entered STN: 08 Jan 2003  
 TI Organic electroluminescent substance for electroluminescent device emitting yellow to red color light  
 IN Toba, Yasumasa; Kanno, Masaki  
 PA Toyo Ink Mfg. Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 24 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS C09K011-06; H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003003164	A2	20030108	JP 2001-189097	20010622
PRAI JP 2001-189097		20010622		
OS MARPAT 138:80453				
GI				



AB An alkylamino(hydrocarbyl) aromatic electroluminescent substance I [R1-2 = C1-18 monovalent organic group; R3-11 = H, C1-18 monovalent organic group; Ar1 =

C4-30 (un)substituted divalent aromatic hydrocarbyl or aromatic heterocycle group; X = O, S, NY; Y = C1-18 monovalent organic group; Z = C2-20 (un)substituted divalent aliphatic hydrocarbyl group forming 5-7 membered ring; two groups selected from R1-11 and Ar1 may form a ring; m, n = 0, 1, 2; m + n ≥ 1]. An organic electroluminescent **device** comprising one or multiple organic layers between a pair of electrodes contains the substance in ≥ 1 of the organic layers. The **device** durably emits high intensity yellow to red color light at high efficiency.

ST yellow red emitting electroluminescent **device** alkylamino arom phosphor

IT Phosphors

(electroluminescent; organic electroluminescent substance emitting yellow- to red-color-light for electroluminescent **device**)

IT Electroluminescent devices

(organic electroluminescent substance emitting yellow- to red-color-light for electroluminescent **device**)

IT 78-59-1, Isophoron 98-10-2, Benzenesulfonamide 100-10-7, 4-Dimethylaminobenzaldehyde 110-89-4, Piperidine, reactions 2758-18-1, 3-Methylcyclopent-2-enone 19172-47-5, Lawesson's reagent

RL: RCT (Reactant); RACT (Reactant or reagent)

(in preparation of alkylamino(hydrocarbyl) aromatic electroluminescent substance emitting yellow- to red-color-light for electroluminescent **device**)

IT 6502-13-2P 481000-78-6P 481001-29-0P

RL: DEV (Device component use); IMF (Industrial manufacture);

TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(organic electroluminescent substance emitting yellow- to red-color-light for electroluminescent **device**)

IT 481000-85-5 481000-86-6 481000-88-8 481000-91-3 481000-92-4

481000-94-6 481000-95-7 481000-98-0 481000-99-1 481001-02-9

481001-03-0 481001-06-3 **481001-08-5** 481001-11-0

481001-12-1 481001-15-4 481001-16-5 481001-18-7 481001-19-8

481001-22-3 481001-23-4 481001-26-7 481001-27-8 481001-31-4

481001-34-7 481001-40-5 481001-42-7 481001-44-9

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(organic **electroluminescent** substance emitting yellow- to red-color-light for **electroluminescent device**)

IT 481000-81-1P 481000-82-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(organic electroluminescent substance emitting yellow- to red-color-light for electroluminescent **device**)

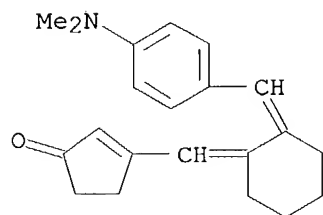
IT 481001-08-5

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(organic electroluminescent substance emitting yellow- to red-color-light for electroluminescent device)

RN 481001-08-5 HCAPLUS

CN 2-Cyclopenten-1-one, 3-[[2-[[4-(dimethylamino)phenyl]methylene]cyclohexylidene]methyl]- (9CI) (CA INDEX NAME)



L33 ANSWER 6 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:656058 HCAPLUS

DN 137:192550

ED Entered STN: 30 Aug 2002

TI Organic electroluminescent devices, especially red-emitting devices, and doping agents for them

IN Richter, Andreas; Keil, Dietmar; Diener, Gerhard

PA Syntec Gesellschaft fuer Chemie und Technologie der Informationsaufzeichnung m.b.H., Germany

SO Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DT Patent

LA German

IC ICM C09K011-06

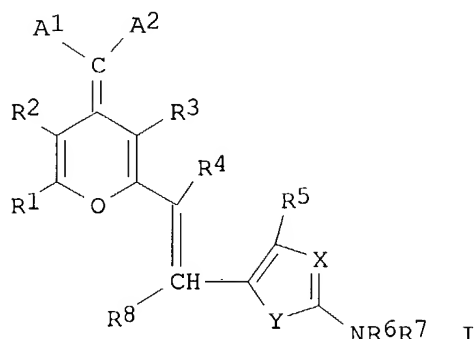
ICS H05B033-14; H01L051-20

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

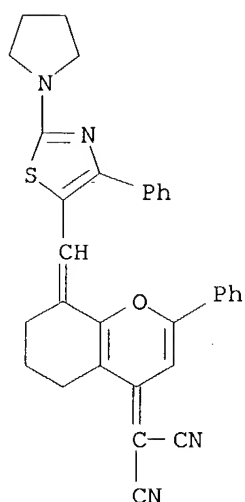
Section cross-reference(s): 28, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1234866	A2	20020828	EP 2002-90077	20020227
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	DE 10109464	A1	20020905	DE 2001-10109464	20010227
PRAI	DE 2001-10109464	A	20010227		
OS	MARPAT 137:192550				
GI					

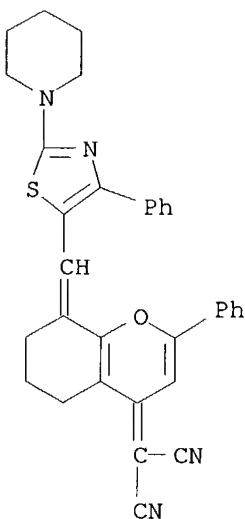


- AB Electroluminescent devices comprising a hole-transporting layer and a luminescent layer between electrodes ( $\geq 1$  of which is transparent) are described in which the luminescent layer comprises, or incorporates as a dopant  $\geq 1$  compound described by the general formula I (R1-12 = independently selected H, (un)branched C1-6 alkyl, aralkyl, or (un)sbstituted aryl; R1 and R2 and/or R3 and R4 and/or R4 and R5 and/or R5 and R11 and/or R8 and R5 and/or R4 and R12 can form a 5- or 6-membered alicyclic, heterocyclic, or aromatic ring; R5 can also be selected from H, OH, OR9, N,N-di(C1-6 alkyl)amino, acetylamino, or halo groups; R6 and R7 can form an alicyclic or heterocyclic ring; A1 and A2 = independently selected -CN, -NO2 or -COOR8; X = -CH, -CR11 or N; and Y = O, -NH, -NR12, S, or Se). The compds. are also claimed.
- ST pyran deriv dopant org electroluminescent **device**
- IT Luminescent substances  
(electroluminescent; organic electroluminescent devices and materials and doping agents for them)
- IT Electroluminescent devices  
(organic; organic electroluminescent devices and materials and doping agents for them)
- IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 25067-59-8, Poly(N-vinylcarbazole) 65181-78-4, N,N'-Diphenyl-N,N'-bis-(3-methylphenyl)benzidine 123847-85-8 185690-39-5, 4,4',4''-Tris[N-(1-naphthyl)-N-phenylamino]triphenylamine  
RL: **DEV (Device component use)**; USES (Uses)  
(organic electroluminescent devices and materials and doping agents for them)
- IT **451454-85-6 451454-91-4**  
RL: **DEV (Device component use)**; MOA (Modifier or additive use);  
USES (Uses)  
(organic **electroluminescent** devices and materials and doping agents for them)
- IT **451454-85-6 451454-91-4**  
RL: **DEV (Device component use)**; MOA (Modifier or additive use);  
USES (Uses)  
(organic **electroluminescent** devices and materials and doping agents for them)
- RN 451454-85-6 HCAPLUS
- CN Propanedinitrile, [5,6,7,8-tetrahydro-2-phenyl-8-[[4-phenyl-2-(1-pyrrolidinyl)-5-thiazolyl]methylene]-4H-1-benzopyran-4-ylidene]- (9CI)  
(CA INDEX NAME)



RN 451454-91-4 HCAPLUS

CN Propanedinitrile, [5,6,7,8-tetrahydro-2-phenyl-8-[[4-phenyl-2-(1-piperidinyl)-5-thiazolyl]methylene]-4H-1-benzopyran-4-ylidene]- (9CI) (CA INDEX NAME)



L33 ANSWER 7 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:381277 HCAPLUS

DN 136:393043

ED Entered STN: 22 May 2002

TI Azepine compound as light-emitting substance and electroluminescent device using the compound

IN Matsuoka, Masaru; Shirai, Kazuko; Kitaguchi, Toru; Kanbara, Shigeki

PA Daicel Chemical Industries, Ltd., Japan

50 Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

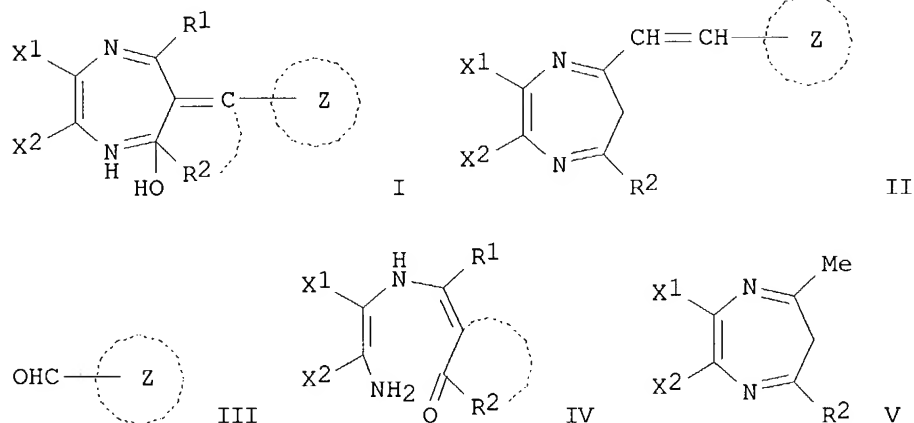
DT Patent

LA Japanese  
 IC ICM C07D243-08  
 ICS C07D491-048; C09K011-06; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002145869	A2	20020522	JP 2000-339088	20001107
	US 2002091256	A1	20020711	US 2001-986164	20011107
PRAI	JP 2000-339088	A	20001107		
OS	MARPAT 136:393043				
GI					



AB The azepine compound is that represented as I or II [X1, X2 = electron-withdrawing group; R1 = H, alkyl, aryl, aralkyl, alkoxy; R2 = N-substituted amino; R2 may form ring with C in Z in I; Z = (substituted) cyclohydrocarbyl, (substituted) heterocycle]. The compound may be photoluminescent or electroluminescent. The compound is manufactured by reaction

of cyclic aldehyde III (Z is the same as above) and amines IV or V (X1, X2, R1, R2 are the same as above). The electroluminescent **device** has an organic layer containing I or II sandwiched between a pair of electrodes,

which shows light emission of long wavelength, i.e., from yellow to red.

ST azepine light emitting substance photoluminescent electroluminescent; org electroluminescent **device** azepine

IT Electroluminescent devices

Fluorescent substances

(azepine compound as light-emitting substance for electroluminescent **device**)

IT Luminescent substances

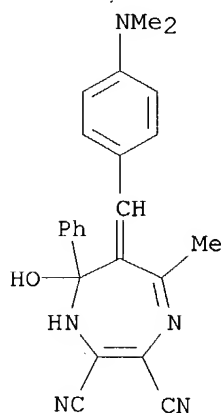
(electroluminescent; azepine compound as light-emitting substance for electroluminescent **device**)

IT 51802-55-2P 56984-06-6P **371923-65-8P 426829-19-8P**

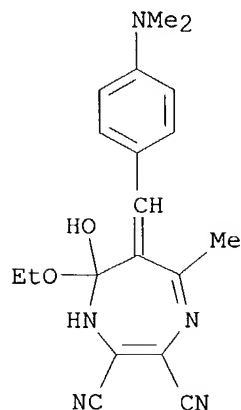
RL: IMF (Industrial manufacture); PREP (Preparation)



- (azepine compound as light-emitting substance for  
**electroluminescent device**)
- IT 371923-72-7P 371923-91-0P 372187-81-0P **426829-18-7P**  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
use); PREP (Preparation); USES (Uses)  
(azepine compound as light-emitting substance for  
**electroluminescent device**)
- IT 93-91-4, 1-Phenylbutane-1,3-dione 123-54-6, 2,4-Pentanedione, reactions  
141-97-9, 1-Ethoxybutane-1,3-dione 517-23-7 1187-42-4,  
Diaminomaleonitrile 2044-64-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(for preparation of azepine compound as light-emitting substance for  
**electroluminescent device**)
- IT 57444-07-2P 57444-13-0P 371923-82-9P 371923-84-1P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(intermediate; for preparation of azepine compound as light-emitting  
substance  
for electroluminescent **device**)
- IT **371923-65-8P 426829-19-8P**  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(azepine compound as light-emitting substance for  
**electroluminescent device**)
- RN 371923-65-8 HCAPLUS
- CN 1H-1,4-Diazepine-2,3-dicarbonitrile, 6-[[4-(dimethylamino)phenyl]methylene  
]-6,7-dihydro-7-hydroxy-5-methyl- (9CI) (CA INDEX NAME)



- RN 426829-19-8 HCAPLUS
- CN 1H-1,4-Diazepine-2,3-dicarbonitrile, 6-[[4-(dimethylamino)phenyl]methylene  
]-7-ethoxy-6,7-dihydro-7-hydroxy-5-methyl- (9CI) (CA INDEX NAME)



IT 426829-18-7P

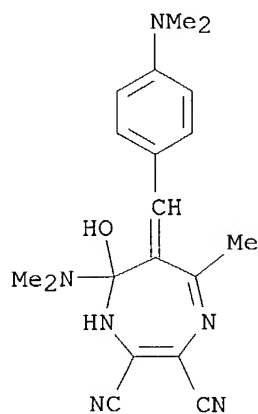
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(azepine compound as light-emitting substance for

**electroluminescent device**)

RN 426829-18-7 HCAPLUS

CN 1H-1,4-Diazepine-2,3-dicarbonitrile, 7-(dimethylamino)-6-[[4-(dimethylamino)phenyl]methylene]-6,7-dihydro-7-hydroxy-5-methyl- (9CI)  
(CA INDEX NAME)



L33 ANSWER(8) OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:368916 HCAPLUS

DN 136:393041

ED Entered STN: 18 May 2002

TI Organic electroluminescent devices

IN Toguchi, Satoru; Ishikawa, Hitoshi; Tada, Hiroshi; Oda, Atsushi  
PA Japan

SO U.S. Pat. Appl. Publ., 87 pp.

CODEN: USXXCO

DT Patent

LA English

IC H05B033-12

NCL 428690000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002058156	A1	20020516	US 2001-985657	20011105
	JP 2002151263	A2	20020524	JP 2000-339603	20001107
	JP 2002151264	A2	20020524	JP 2000-339604	20001107
	JP 2002151265	A2	20020524	JP 2000-339605	20001107
PRAI	JP 2000-339603	A	20001107		
	JP 2000-339604	A	20001107		
	JP 2000-339605	A	20001107		
OS	MARPAT 136:393041				
AB	Organic electroluminescent devices comprising an anode; a cathode; and $\geq 1$ organic thin film layers including a light-emitting layer sandwiched between said anode and said cathode ADIW $\geq 1$ organic thin film layer contains a compound including an (un)substituted cyclohexylidenemethine group.				
ST	org electroluminescent device cyclohexylidenemethine deriv				
IT	Electroluminescent devices (organic; organic electroluminescent devices employing cyclohexylidenemethine derivs.)				
IT	2085-33-8, Alq3 15082-28-7, 2-(4-Biphenyl)-5-(4-t-butylphenyl)-1,3,4-oxadiazole 37271-44-6 50926-11-9, ITO 61843-06-9 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-1,1'-biphenyl-4,4'-diamine 123847-85-8 150405-69-9 163226-12-8 181367-28-2 194214-31-8 194794-43-9 227939-49-3 426218-62-4 426218-63-5 RL: DEV (Device component use); USES (Uses) (organic electroluminescent devices employing cyclohexylidenemethine derivs.)				
IT	7440-46-2, Cesium, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (organic electroluminescent devices employing cyclohexylidenemethine derivs.)				
IT	<b>426218-12-4P</b> 426218-13-5P <b>426218-14-6P</b> 426218-15-7P 426218-16-8P <b>426218-17-9P</b> 426218-18-0P 426218-19-1P <b>426218-20-4P</b> 426218-21-5P 426218-22-6P <b>426218-23-7P</b> 426218-24-8P 426218-25-9P <b>426218-26-0P</b> 426218-27-1P 426218-28-2P <b>426218-30-6P</b> 426218-31-7P 426218-32-8P <b>426218-33-9P</b> 426218-34-0P 426218-35-1P <b>426218-36-2P</b> <b>426218-37-3P</b> 426218-38-4P <b>426218-40-8P</b> 426218-41-9P 426218-42-0P 426218-44-2P 426218-46-4P 426218-47-5P 426218-49-7P 426218-50-0P <b>426218-52-2P</b> 426218-53-3P <b>426218-54-4P</b> <b>426218-55-5P</b> <b>426218-56-6P</b> <b>426218-59-9P</b> <b>426218-60-2P</b> <b>426218-61-3P</b> <b>426252-99-5P</b> 426253-00-1P 426253-01-2P RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (organic electroluminescent devices employing cyclohexylidenemethine derivs.)				
IT	62-53-3, Aniline, reactions 83-53-4, 1,4-Dibromonaphthalene 106-49-0, p-Toluidine, reactions 108-94-1, Cyclohexanone, reactions 122-52-1, Triethyl phosphite 128-08-5, N-Bromosuccinimide 523-27-3, 9,10-Dibromoanthracene 589-15-1, 4-Bromobenzyl bromide 589-17-3, $\alpha$ -Chloro-4-bromotoluene 626-39-1, 1,3,5-Tribromobenzene				

4316-58-9, Tris(4-bromophenyl)amine 19930-62-2 33861-11-9  
 56752-35-3, 3,9-Dibromoperylene 72393-15-8 97136-66-8 98327-87-8,  
 2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl 121848-75-7,  
 10,10'-Dibromo-9,9'-bianthryl 128055-74-3, 2,2',7,7'-Tetrabromo-9,9'-  
 spirobifluorene 227010-27-7 252646-79-0 426218-07-7 426218-09-9  
 426218-29-3 426218-39-5 426218-57-7 426218-58-8 426252-98-4

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic electroluminescent devices employing cyclohexylidenemethine  
 derivs.)

IT 57438-72-9P 72436-33-0P 426218-05-5P 426218-06-6P 426218-08-8P  
 426218-10-2P 426218-11-3P 426218-43-1P 426218-45-3P 426218-48-6P  
 426218-51-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (organic electroluminescent devices employing cyclohexylidenemethine  
 derivs.)

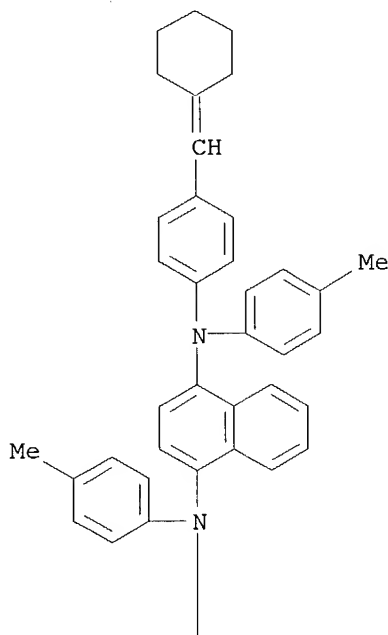
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 426218-20-4P 426218-23-7P 426218-26-0P  
 426218-30-6P 426218-33-9P 426218-36-2P  
 426218-37-3P 426218-40-8P 426218-52-2P  
 426218-54-4P 426218-55-5P 426218-56-6P  
 426218-59-9P 426218-60-2P 426218-61-3P  
 426252-99-5P

RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (organic electroluminescent devices employing  
 cyclohexylidenemethine derivs.)

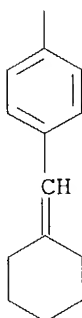
RN 426218-12-4 HCAPLUS

CN 1,4-Naphthalenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-  
 bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

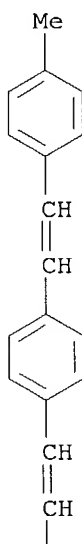


PAGE 2-A

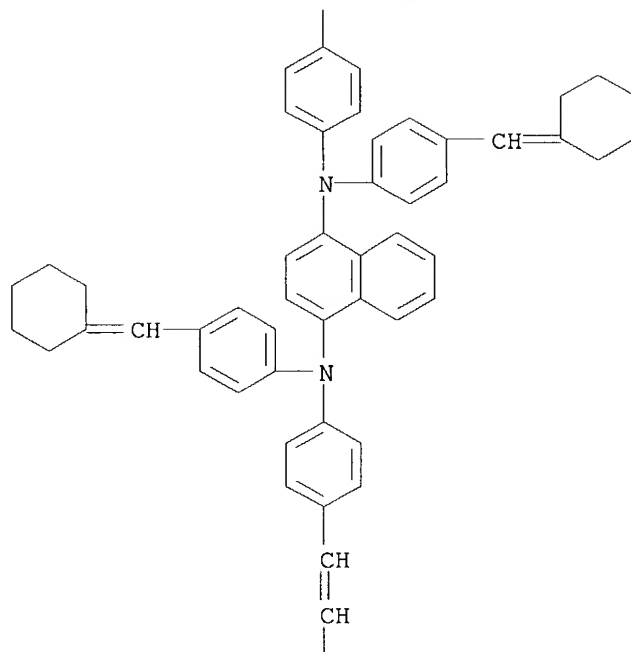


RN 426218-14-6 HCAPLUS  
CN 1,4-Naphthalenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis[4-[2-[4-[2-(4-methylphenyl)ethenyl]phenyl]ethenyl]phenyl]- (9CI) (CA INDEX NAME)

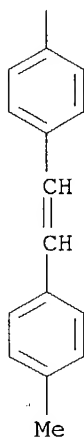
PAGE 1-A



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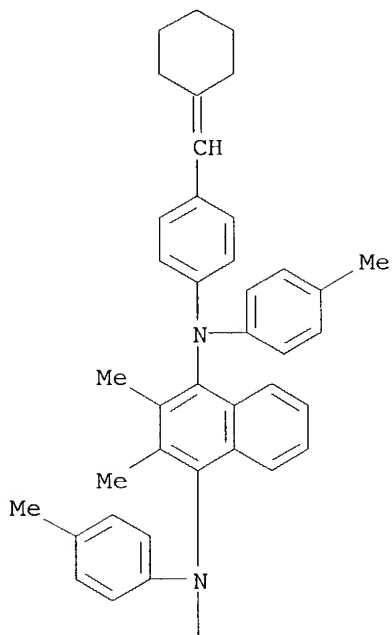
PAGE 3-A



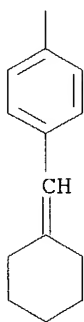
RN 426218-17-9 HCAPLUS

CN 1,4-Naphthalenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-2,3-dimethyl-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

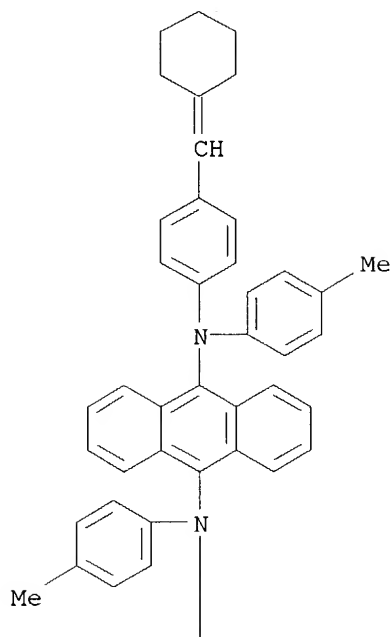


PAGE 2-A

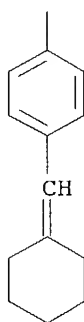


RN 426218-20-4 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

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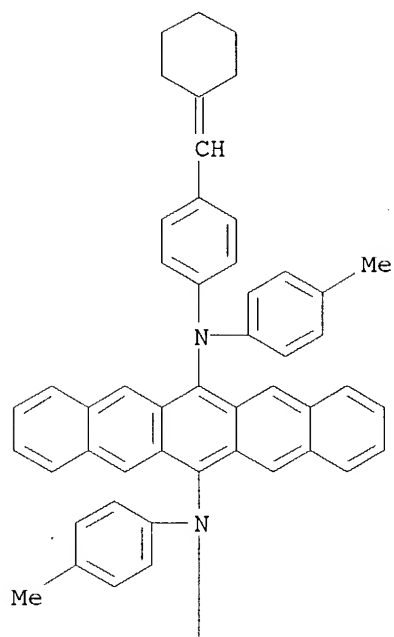


RN 426218-23-7 HCAPLUS

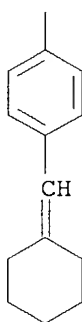
CN 6,13-Pentacenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



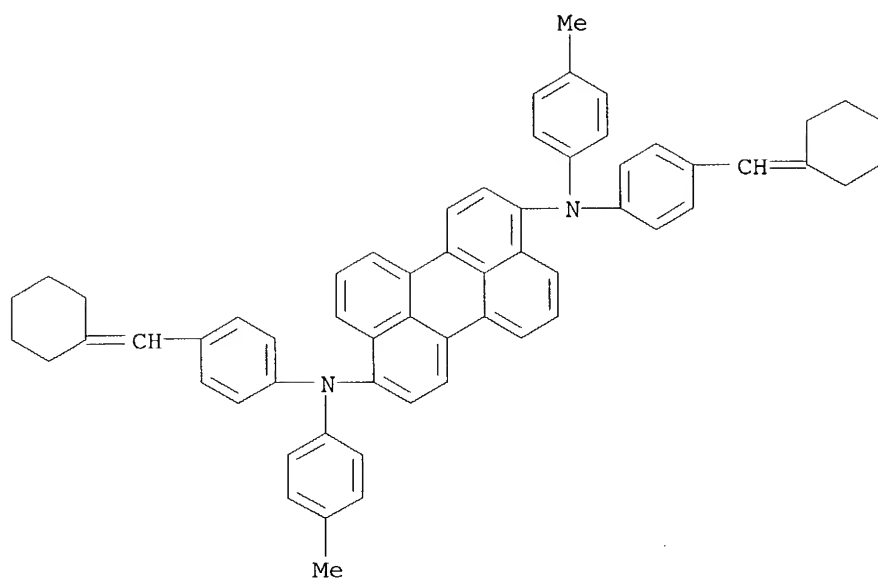
PAGE 1-A



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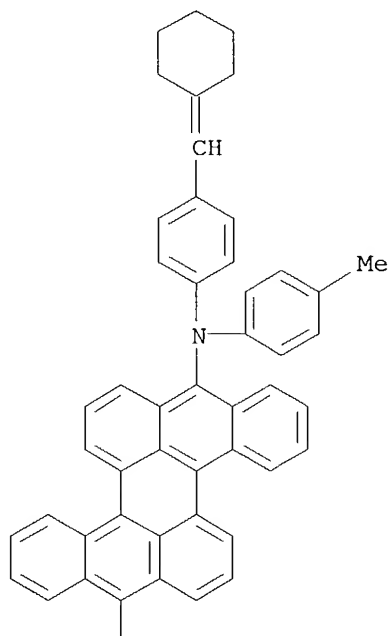
RN 426218-26-0 HCAPLUS  
CN 3,9-Perylenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



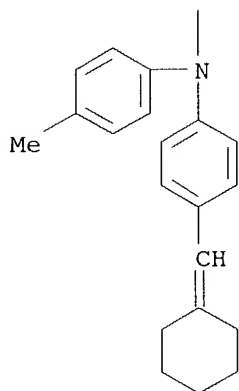
RN 426218-30-6 HCAPLUS

CN Dibenzo[a,j]perylene-8,16-diamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

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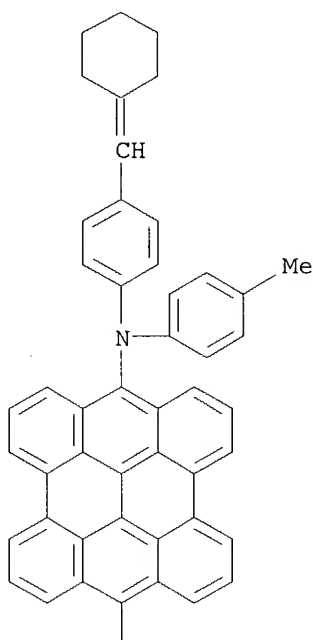
PAGE 2-A



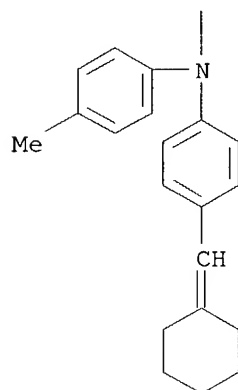
RN 426218-33-9 HCAPLUS

CN Phenanthro[1,10,9,8-opqra]perylene-7,14-diamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

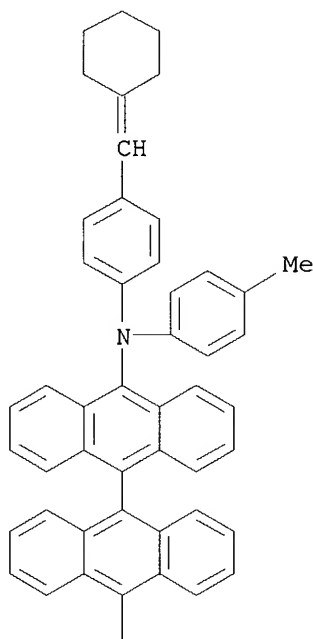


PAGE 2-A

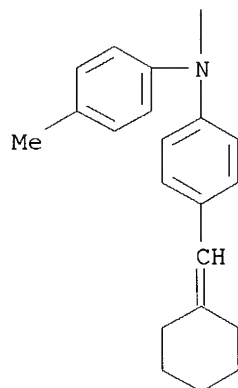


RN 426218-36-2 HCAPLUS  
CN [9,9'-Bianthracene]-10,10'-diamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

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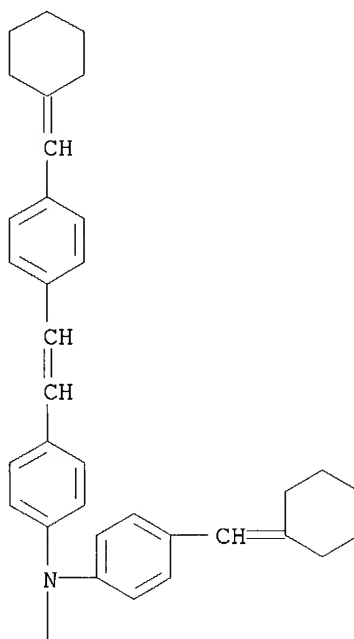


PAGE 2-A

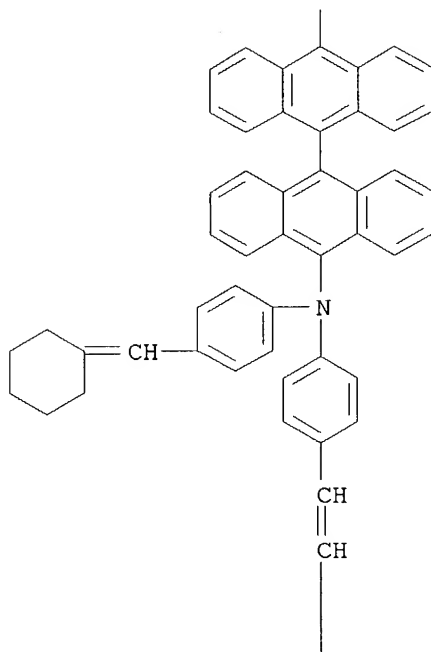


RN	426218-37-3	HCAPLUS
CN	<p>[9,9'-Bianthracene]-10,10'-diamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis[4-[2-[4-(cyclohexylidenemethyl)phenyl]ethenyl]phenyl]- (9CI) (CA INDEX NAME)</p>	

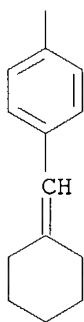
PAGE 1-A



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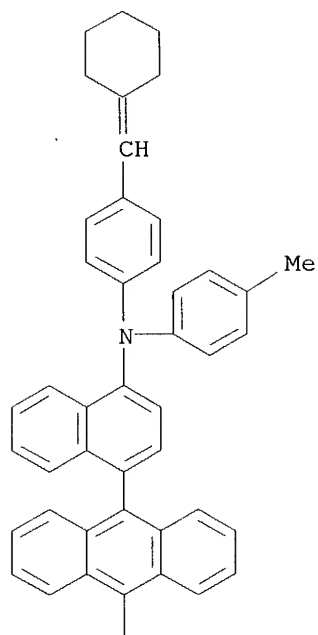
PAGE 3-A



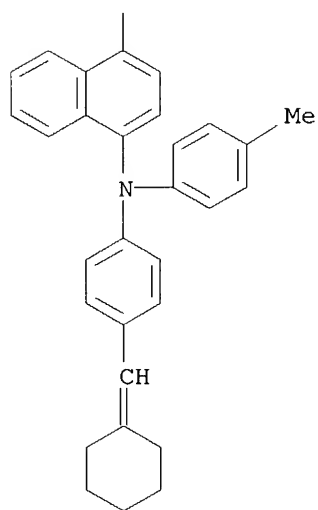
RN 426218-40-8 HCAPLUS

CN 1-Naphthalenamine, 4,4'-(9,10-anthracenediyl)bis[N-(4-(cyclohexylidenemethyl)phenyl)-N-(4-methylphenyl)- (9CI) (CA INDEX NAME)

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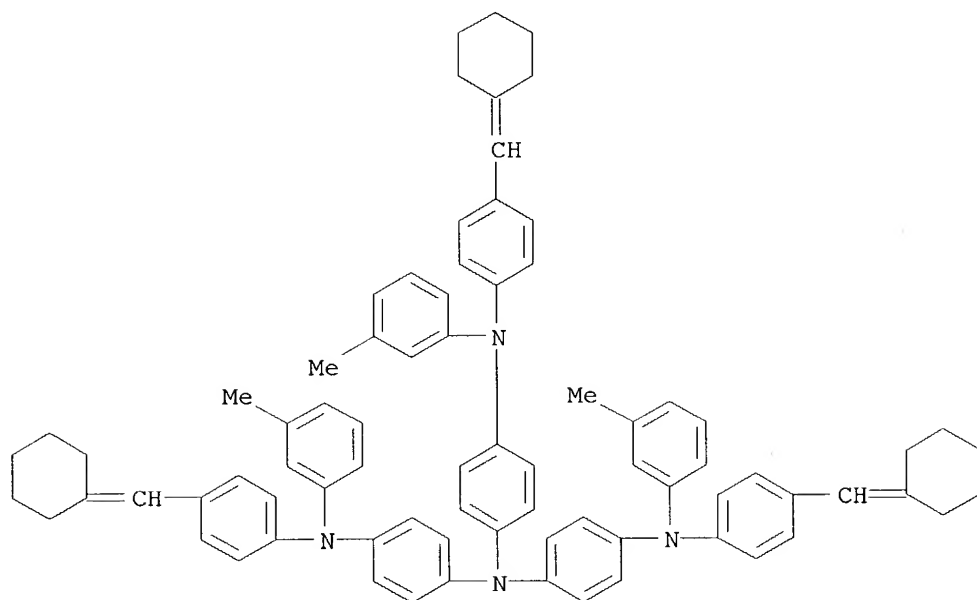


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RN 426218-52-2 HCAPLUS

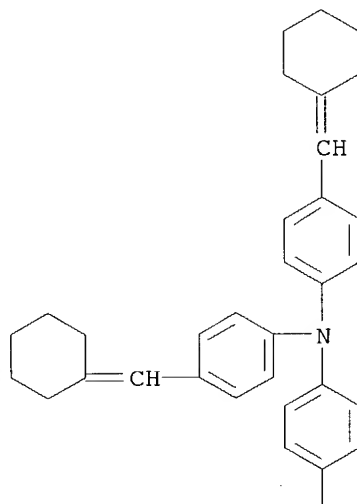
CN 1,4-Benzenediamine, N-[4-(cyclohexylidenemethyl)phenyl]-N',N'-bis[4-[[4-(cyclohexylidenemethyl)phenyl](3-methylphenyl)amino]phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 426218-54-4 HCAPLUS

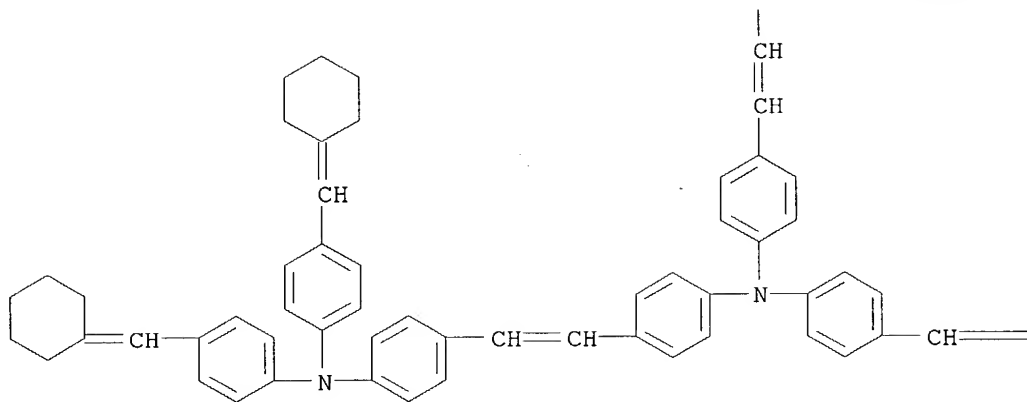
CN Benzenamine, 4-[2-[4-[bis[4-(cyclohexylidenemethyl)phenyl]amino]phenyl]eth  
enyl]-N,N-bis[4-[2-[4-[bis[4-(cyclohexylidenemethyl)phenyl]amino]phenyl]et  
henyl]phenyl]- (9CI) (CA INDEX NAME)

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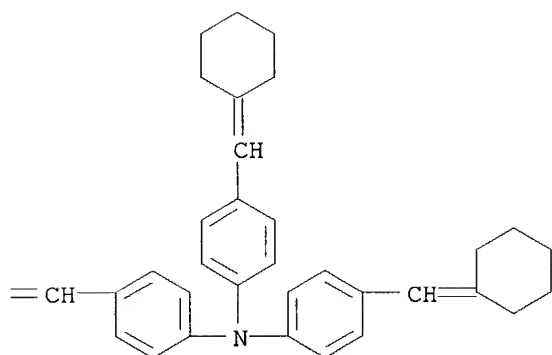




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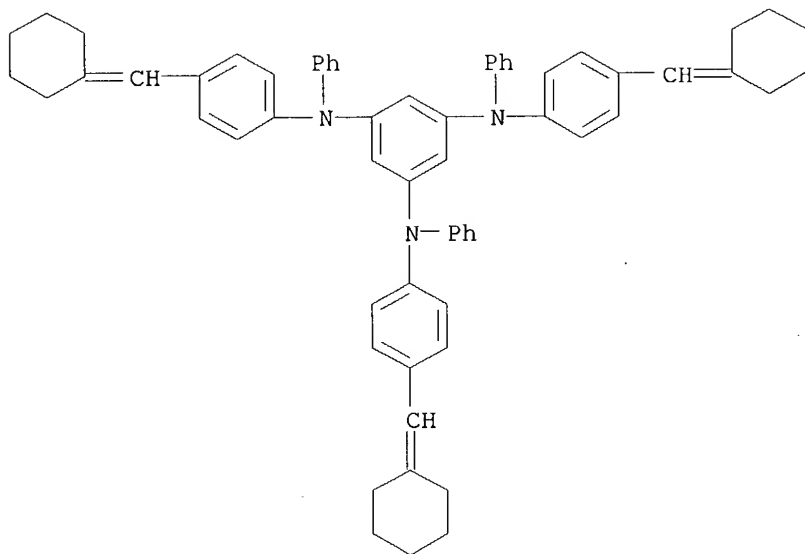


PAGE 2-B



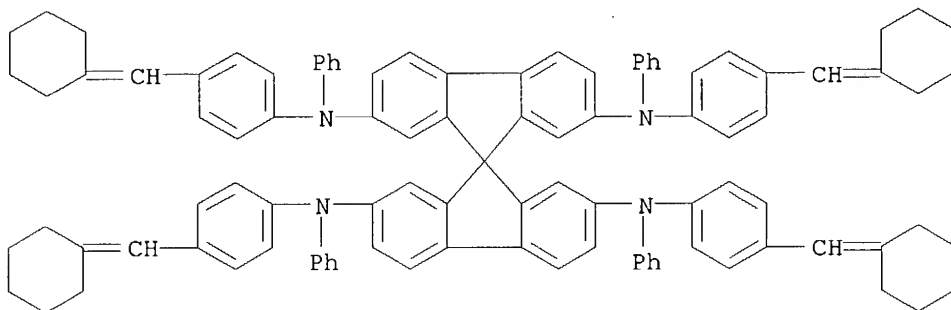
RN 426218-55-5 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris[4-(cyclohexylidenemethyl)phenyl]-  
N,N',N''-triphenyl- (9CI) (CA INDEX NAME)



RN 426218-56-6 HCAPLUS

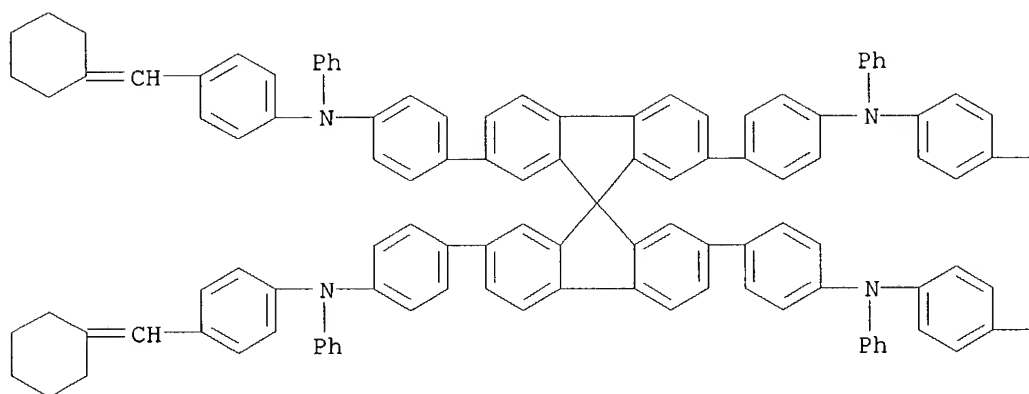
CN 9,9'-Spirobi[9H-fluorene]-2,2',7,7'-tetramine, N,N',N'',N'''-tetrakis[4-(cyclohexylidenemethyl)phenyl]-N,N',N'',N'''-tetraphenyl- (9CI) (CA INDEX NAME)



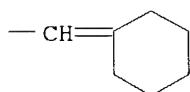
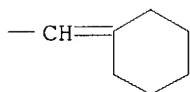
RN 426218-59-9 HCAPLUS

CN Benzenamine, 4,4',4'',4'''-(9,9'-spirobi[9H-fluorene]-2,2',7,7'-tetrayl)tetrakis[N-[4-(cyclohexylidenemethyl)phenyl]-N-phenyl]- (9CI) (CA INDEX NAME)

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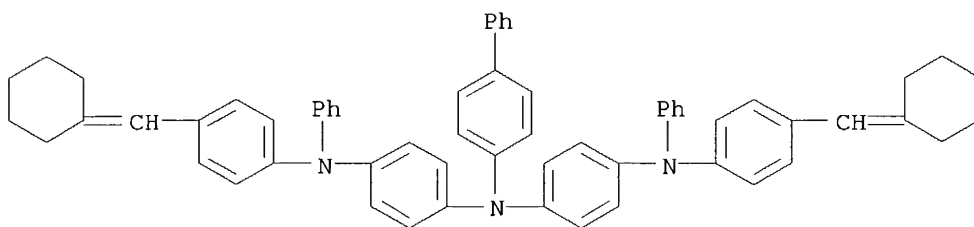


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RN 426218-60-2 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-[4-(cyclohexylidenemethyl)phenyl]-N-[4-[[4-(cyclohexylidenemethyl)phenyl]phenylamino]phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)

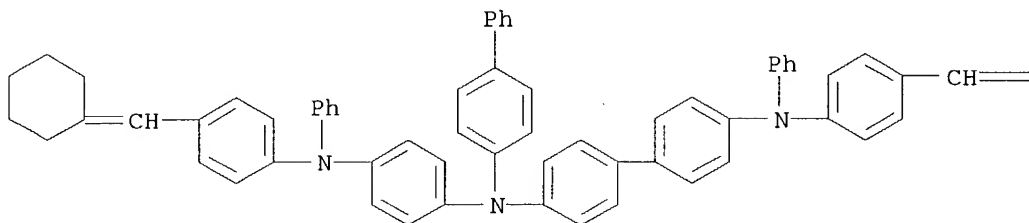


RN 426218-61-3 HCAPLUS

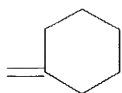
CN [1,1'-Biphenyl]-4,4'-diamine, N-[1,1'-biphenyl]-4-yl-N'-[4-

(cyclohexylidenemethyl)phenyl]-N-[4-[[4-(cyclohexylidenemethyl)phenyl]phenylamino]phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)

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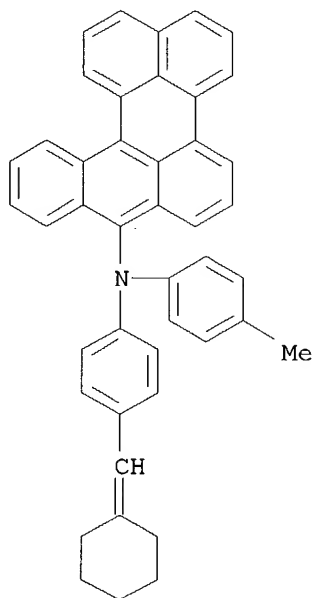


PAGE 1-B

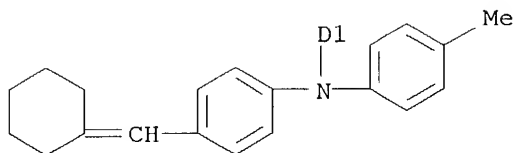


RN 426252-99-5 HCAPLUS  
CN Benzo[a]perylene-7,?-diamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

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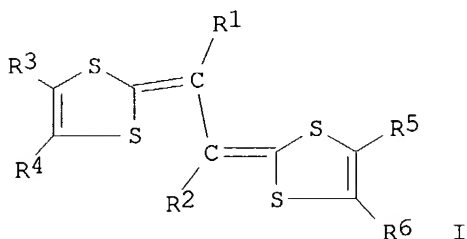
PAGE 2-A



L33 ANSWER (9) OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2002:172373 HCAPLUS  
 DN 136:223996  
 ED Entered STN: 08 Mar 2002  
 TI Organic electroluminescent **device** containing dithiafulvene derivative  
 IN Fujishita, Yuichi; Uchida, Manabu; Nakano, Takaharu; Furukawa, Kenji  
 PA Japan  
 SO U.S. Pat. Appl. Publ., 8 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 IC ICM H05B033-14  
 NCL 313504000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

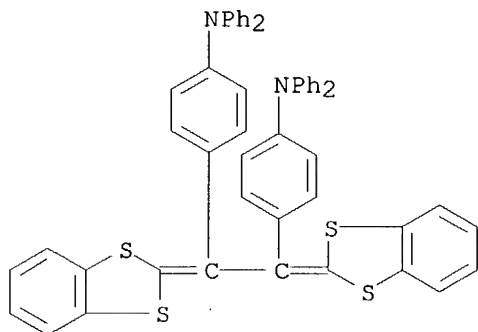
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002027415	A1	20020307	US 2001-920850	20010803
	US 6617053	B2	20030909		
	JP 2002117979	A2	20020419	JP 2001-235781	20010803
	GB 2368844	A1	20020515	GB 2001-19049	20010803
PRAI	JP 2000-236617	A	20000804		
OS	MARPAT 136:223996				
GI					



AB The present invention provides an organic electroluminescent **device** having a high luminous efficiency and a long life, which comprises a dithiafulvene derivative represented by I [R1,2 = alkyl, aryl, and heterocyclic groups; R3-6 = H, alkyl, alkenyl, alkylthio, arylthio, aryl and heterocyclic groups; when R3-6 are an aryl group or a heterocyclic group adjacent to each other, they may be condensed to each other].  
 ST org electroluminescent **device** dithiafulvene deriv  
 IT Electroluminescent devices

(organic electroluminescent **device** containing dithiafulvene derivative)  
 IT 5694-57-5D, 1,4-Dithiafulvene, derivs. 213768-72-0 **402481-44-1**  
 RL: **DEV (Device component use)**; USES (Uses)  
 (organic electroluminescent **device** containing  
 dithiafulvene derivative)  
 IT **402481-44-1**  
 RL: **DEV (Device component use)**; USES (Uses)  
 (organic electroluminescent **device** containing  
 dithiafulvene derivative)  
 RN 402481-44-1 HCAPLUS  
 CN Benzenamine, 4,4'-[1,2-bis(1,3-benzodithiol-2-ylidene)-1,2-  
 ethanediyl]bis[N,N-diphenyl- (9CI) (CA INDEX NAME)



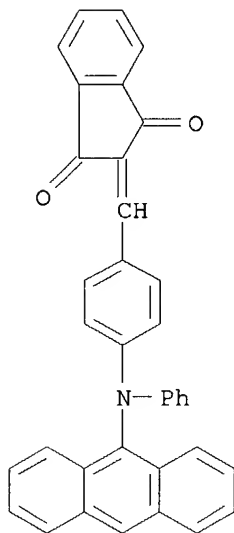
L33 ANSWER 10 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2001:932596 HCAPLUS  
 DN 136:61299  
 ED Entered STN: 27 Dec 2001  
 TI Electroluminescent **device** using styrylamines  
 IN Arai, Kazumi  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 33 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS C09K011-06; C07C225-22; C07D209-88; C07D333-36; C07D401-12;  
 C07D409-12; C07D413-12; C07D417-12; C07D471-04; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 74

FAN.CNT 1

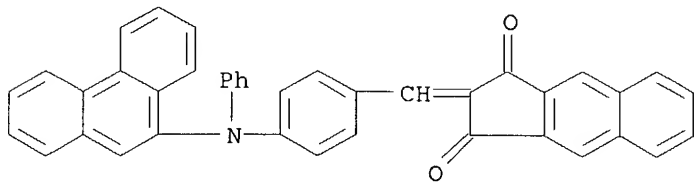
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001354955	A2	20011225	JP 2000-177761	20000614
JP 2000-177761		20000614		
MARPAT 136:61299				

AB The invention relates to a red-emitting electroluminescent **device** comprising R1R2R3N [R1-3 = (un)substituted aryl, heterocyclyl, aliphatic hydrocarbyl; ≥2 of R1-3 is aryl or heterocyclyl; ≥1 of R1-3 is aryl or heterocyclyl formed by ≥3 rings; ≥2 of R1-3 may form a ring; ≥1 R1-3 is substituted by a group (5 - 7 membered ring):C(R4)(CR5:CR6)m- (R4-6 = H, substituent; m = 0, 1 or 2)]. The red

luminous component offers superior in color purity.  
 ST styrylamine red emitting electroluminescent **device**  
 IT Electroluminescent devices  
 Luminescence  
 (of red light-emitting component using chemical compds. and styrylamines)  
 IT 382601-08-3P 382601-09-4P 382601-10-7P  
 382601-11-8P 382601-12-9P 382601-13-0P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (electroluminescent devices using styrylamines)  
 IT 852-38-0, PBD 905-62-4, 2,5-Bis(1-naphthyl)-1,3,4-oxadiazole  
 25067-59-8, Poly(N-vinylcarbazole) 65181-78-4, TPD 313950-73-1  
 RL: DEV (Device component use); USES (Uses)  
 (electroluminescent devices using styrylamines and)  
 IT 382601-08-3P 382601-09-4P 382601-10-7P  
 382601-11-8P 382601-12-9P 382601-13-0P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (electroluminescent devices using styrylamines)  
 RN 382601-08-3 HCAPLUS  
 CN 1H-Indene-1,3(2H)-dione, 2-[[4-(9-anthracenylphenylamino)phenyl]methylene]-  
 (9CI) (CA INDEX NAME)

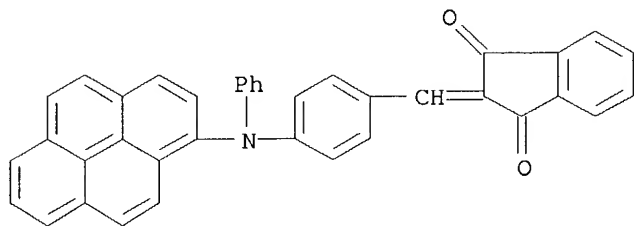


RN 382601-09-4 HCAPLUS  
 CN 1H-Benz[f]indene-1,3(2H)-dione, 2-[[4-(9-phenanthrenylphenylamino)phenyl]methylene]- (9CI) (CA INDEX NAME)



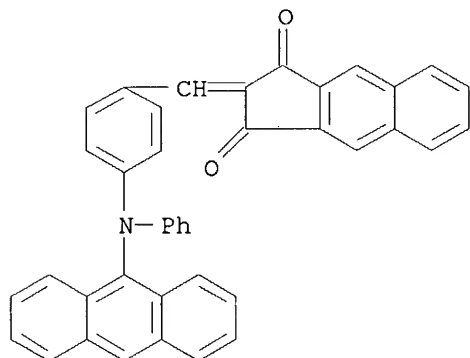
RN 382601-10-7 HCAPLUS

CN 1H-Indene-1,3(2H)-dione, 2-[[4-(phenyl-1-pyrenylamino)phenyl]methylene]-  
(9CI) (CA INDEX NAME)



RN 382601-11-8 HCAPLUS

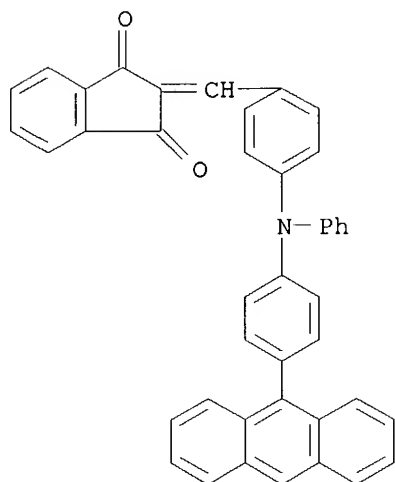
CN 1H-Benz[f]indene-1,3(2H)-dione, 2-[[4-(9-anthracenylphenylamino)phenyl]met  
hylene]- (9CI) (CA INDEX NAME)



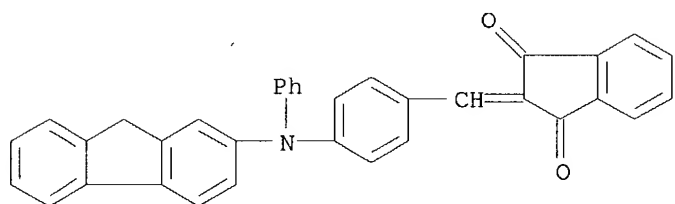
RN 382601-12-9 HCAPLUS

CN 1H-Indene-1,3(2H)-dione, 2-[[4-[[4-(9-anthracenyl)phenyl]phenylamino]pheny  
l]methylene]- (9CI) (CA INDEX NAME)





RN 382601-13-0 HCAPLUS  
 CN 1H-Indene-1,3(2H)-dione, 2-[[4-(9H-fluoren-2-ylphenylamino)phenyl]methylen  
 e]- (9CI) (CA INDEX NAME)



L33 ANSWER 11 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2001:822495 HCAPLUS  
 DN 135:364611  
 ED Entered STN: 13 Nov 2001  
 TI Luminescent 1,4-diazepine derivatives, their preparation, and  
 electroluminescent devices using them  
 IN Matsuoka, Masaru; Fukunishi, Koji; Shirai, Kazuko; Takagi, Koichi;  
 Kitaguchi, Toru  
 PA Daicel Chemical Industries, Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C07D243-08  
 ICS C07D403-06; C07D455-04; C09K011-06; H05B033-14  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 28

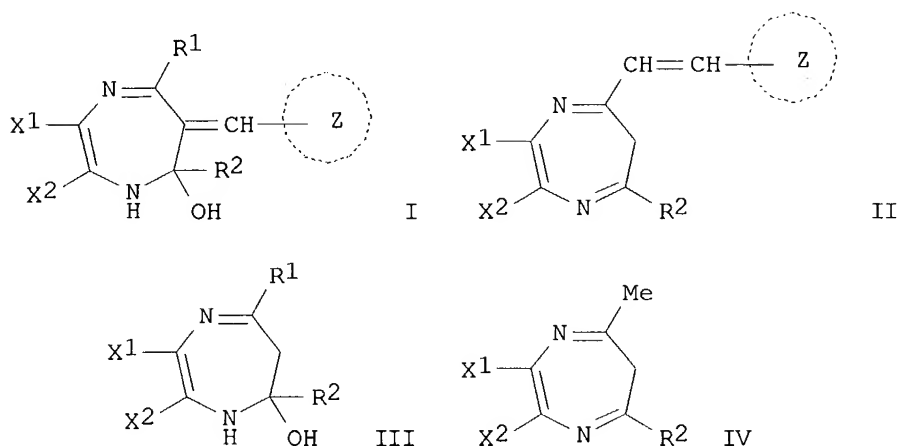
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001316379	A2	20011113	JP 2000-132508	20000501
	US 6440588	B1	20020827	US 2000-711293	20001114

PRAI JP 2000-132508 A 20000501

OS MARPAT 135:364611

GI



AB The derivs. I or II [X1, X2 = electron-withdrawing group; R1, R2 = H, alkyl, aryl, aralkyl, alkoxy; Z = (un)substituted hydrocarbon ring, (un)substituted], which have fluorescent or electroluminescent properties, are prepared by treating III or IV (X1, X2, R1, R2 = same as in I or II, resp.) with ZCHO (Z = same as in I or II). Electroluminescent devices using I or II are also claimed. Diaminomaleonitrile was cyclocondensed with ethoxycarbonylacetone and the resulting 1,4-diazepine derivative was treated with 4-Me2NC6H4CHO to give I (X1 = X2 = cyano, R1 = Me, R2 = OEt, Z = C6H4NEt2-4) (V). Peak wavelengths of V in the absorption spectrum and fluorescent spectrum were 499 and 543 nm, resp. An electroluminescent **device** using V was also manufactured

ST fluorescent dicyanodiazepine prepn electroluminescent **device**;  
diazepine dicyano phenylmethylenide electroluminescent **device**

IT Luminescent substances

(electroluminescent; preparation of luminescent 1,4-diazepines for electroluminescent devices)

IT Electroluminescent devices

Fluorescent substances

(preparation of luminescent 1,4-diazepines for electroluminescent devices)

IT 220934-94-1P 371923-63-6P **371923-67-0P** 371923-72-7P

371923-74-9P 371923-76-1P **371923-87-4P** 371923-93-2P

372187-79-6P 372187-81-0P 372187-82-1P 372187-83-2P 372187-84-3P

372187-85-4P

RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of **luminescent** 1,4-diazepines for **electroluminescent** devices)

IT 93-91-4, Benzoylacetone 100-10-7 120-21-8, 4-Diethylaminobenzaldehyde 123-11-5, 4-Methoxybenzaldehyde, reactions 123-54-6, Acetylacetone, reactions 487-89-8, 1H-Indole-3-carboxaldehyde 1187-42-4, Diaminomaleonitrile 2550-26-7, Benzylacetone 7570-45-8 33985-71-6 51802-62-1 372187-80-9

RL: RCT (Reactant); RACT (Reactant or reagent)

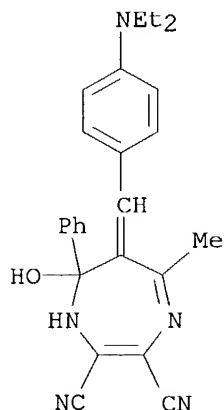
(preparation of luminescent 1,4-diazepines for electroluminescent devices)

IT 51802-61-0P 372187-78-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation of luminescent 1,4-diazepines for electroluminescent devices)

IT **371923-67-0P 371923-87-4P**  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic  
 preparation); PREP (Preparation); USES (Uses)  
 (preparation of **luminescent** 1,4-diazepines for  
**electroluminescent** devices)

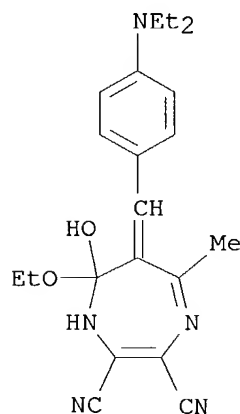
RN 371923-67-0 HCAPLUS

CN 1H-1,4-Diazepine-2,3-dicarbonitrile, 6-[[4-(diethylamino)phenyl]methylene]-  
 6,7-dihydro-7-hydroxy-5-methyl-7-phenyl- (9CI) (CA INDEX NAME)



RN 371923-87-4 HCAPLUS

CN 1H-1,4-Diazepine-2,3-dicarbonitrile, 6-[[4-(diethylamino)phenyl]methylene]-  
 7-ethoxy-6,7-dihydro-7-hydroxy-5-methyl- (9CI) (CA INDEX NAME)



L33 ANSWER 12 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:805023 HCAPLUS

DN 136:254062

ED Entered STN: 06 Nov 2001

TI Polyimide structures with high charge-carrier mobility for  
 electroluminescent devices and liquid-crystal light modulators

AU Aleksandrova, E. L.; Kazakova, L. P.; Chernyshev, A. V.  
 CS S. I. Vavilov State Optical Institute, St. Petersburg, Russia  
 SO Journal of Optical Technology (Translation of Opticheskii Zhurnal) (2001),  
 68(11), 805-808  
 CODEN: JOTEE4; ISSN: 1070-9762  
 PB Optical Society of America  
 DT Journal  
 LA English  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 36, 38, 41, 74, 76, 78  
 AB This paper discusses the transport properties of polyimides (PIs), which  
 are of interest for the creation of liquid-crystal light modulators and  
 electroluminescent devices for information displays. It is shown that the  
 luminescence spectrum and the charge-carrier mobility can be controlled by  
 introducing dye mols. into the PIs. It is established that the  
 charge-carrier drift mobility in sensitized PI layers reaches high values  
 for organic materials of about  $10^{-3}$  cm<sup>2</sup>/V·sec for an elec. field of  
 F.apprx.104 V/cm and T.apprx.300K.  
 ST polyimide charge carrier mobility photoluminescence electroluminescent  
 device dye doping  
 IT Photocurrent  
 (as function of elec. field; for polyimide structures with high  
 charge-carrier mobility for electroluminescent devices and liquid-crystal  
 light modulators)  
 IT Doping  
 (effect of dye; on charge-carrier mobility type of polyimide structures  
 for electroluminescent devices and liquid-crystal light modulators)  
 IT Luminescence  
 (of dye-doped and metal complex-doped polyimide structures)  
 IT Polyimides, properties  
 RL: DEV (Device component use); PEP (Physical, engineering or  
 chemical process); PRP (Properties); PYP (Physical process); PROC  
 (Process); USES (Uses)  
 (polyamine-polyether-; polyimide structures with high charge-carrier  
 mobility for electroluminescent devices and liquid-crystal light  
 modulators)  
 IT Polyethers, properties  
 RL: DEV (Device component use); PEP (Physical, engineering or  
 chemical process); PRP (Properties); PYP (Physical process); PROC  
 (Process); USES (Uses)  
 (polyamine-polyimide-; polyimide structures with high charge-carrier  
 mobility for electroluminescent devices and liquid-crystal light  
 modulators)  
 IT Polyimides, uses  
 RL: DEV (Device component use); USES (Uses)  
 (polyether-; polyimide structures with high charge-carrier mobility for  
 electroluminescent devices and liquid-crystal light modulators)  
 IT Polyamines  
 RL: DEV (Device component use); PEP (Physical, engineering or  
 chemical process); PRP (Properties); PYP (Physical process); PROC  
 (Process); USES (Uses)  
 (polyether-polyimide-; polyimide structures with high charge-carrier  
 mobility for electroluminescent devices and liquid-crystal light  
 modulators)  
 IT Electroluminescent devices  
 Electron mobility  
 Hole mobility

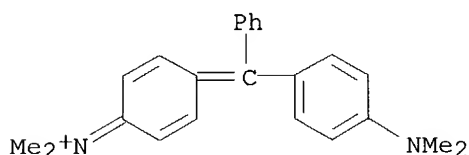
- (polyimide structures with high charge-carrier mobility for electroluminescent devices and liquid-crystal light modulators)
- IT Polyethers, uses  
 RL: **DEV (Device component use)**; USES (Uses)  
 (polyimide-; polyimide structures with high charge-carrier mobility for electroluminescent devices and liquid-crystal light modulators)
- IT 7429-90-5, Aluminum, uses 7439-97-6, Mercury, uses 50926-11-9, Indium tin oxide  
 RL: **DEV (Device component use)**; USES (Uses)  
 (electrode; polyimide structures with high charge-carrier mobility for electroluminescent devices and liquid-crystal light modulators)
- IT 7440-43-9D, Cadmium, biquinoline complex 7440-50-8D, Copper, biquinoline complex 51913-96-3D, Biquinoline, copper and cadmium complex  
 RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
 (luminescence of diphenyloxide polyimide doped with)
- IT 989-38-8, Rhodamine 6G  
 RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
 (luminescence of triphenylamine polyimide doped with)
- IT 53806-79-4 54349-29-0  
 RL: **DEV (Device component use)**; USES (Uses)  
 (polyimide structures with high charge-carrier mobility for electroluminescent devices and liquid-crystal light modulators)
- IT 25735-00-6 25736-02-1 112409-97-9 112410-17-0  
 RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
 (polyimide structures with high charge-carrier mobility for electroluminescent devices and liquid-crystal light modulators)
- IT **569-64-2**, Malachite green  
 RL: **DEV (Device component use)**; MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
 (triphenylamine polyimide doped with; dye-doped polyimide structures with high charge-carrier mobility for **electroluminescent** devices and liquid-crystal light modulators)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (2) Aleksandrova, E; Opt Spektrosk 1988, V64, P1047 HCAPLUS
- (3) Arkhipov, V; Fiz Tekh Poluprovodn 1981, V15, P712 HCAPLUS
- (4) Arkhipov, V; Fiz Tekh Poluprovodn 1987, V21, P727
- (5) Arkhipov, V; Sov Phys Semicond 1981, V15, P405
- (6) Arkhipov, V; Sov Phys Semicond 1987, V21, P442
- (7) Bailey, N; Inform Display 2000, V16(3), P12
- (8) Cherkasov, Y; Opt Spectrosc 1991, V71, P65
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- (13) Lebedev, E; Electronic Phenomena in Glassy Chalcogenide Semiconductors 1996, P141
- (14) Maltsev, E; Polymer International 1997, V42, P404 HCAPLUS
- (15) Myl'nikov, V; Photoconductivity of Polymers 1990

- (16) Podeshvo, I; Abstracts of Reports of the Second All-Russia Kargin Symposium on the Chemistry and Physics of Polymers in the Twenty-First Century 2000, P3
- (17) Rumyantsev, B; Vysokomol Soed Ser A 1997, V39, P720 HCAPLUS
- (18) Spear, W; J Non-Cryst Solids 1969, V1, P197 HCAPLUS
- (19) Tameev, A; Zh Nauchn Prikl Fotogr 1997, V42(2), P38 HCAPLUS
- (20) Tang, C; J Appl Phys Lett 1987, V51, P913 HCAPLUS
- IT 569-64-2, Malachite green  
 RL: DEV (Device component use); MOA (Modifier or additive use);  
 PEP (Physical, engineering or chemical process); PRP (Properties); PYP  
 (Physical process); PROC (Process); USES (Uses)  
 (triphenylamine polyimide doped with; dye-doped polyimide structures  
 with high charge-carrier mobility for **electroluminescent**  
 devices and liquid-crystal light modulators)
- RN 569-64-2 HCAPLUS
- CN Methanaminium, N-[4-[[4-(dimethylamino)phenyl]phenylmethylene]-2,5-  
 cyclohexadien-1-ylidene]-N-methyl-, chloride (9CI) (CA INDEX NAME)



● Cl<sup>-</sup>

L33 ANSWER 13 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:748825 HCAPLUS

DN 133:303297

ED Entered STN: 24 Oct 2000

TI Organic electroluminescent material, **device** therewith, and  
 triarylamine compound as fluorescent dye

IN Arai, Kazumi; Yanagi, Terukazu

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 34 pp.  
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C07C225-22  
 ICS C07D209-86; C07D239-60; C07D277-28; C07D277-30; C07D277-34;  
 C07D277-36; C07D333-36; C07D333-60; C07D333-64; C07D409-10;  
 C07D409-12; C07D417-10; C09K011-06; H05B033-14

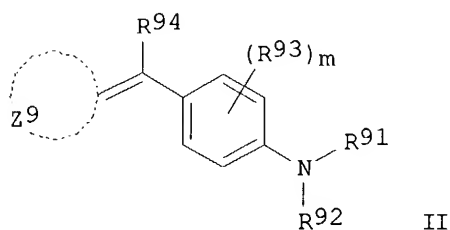
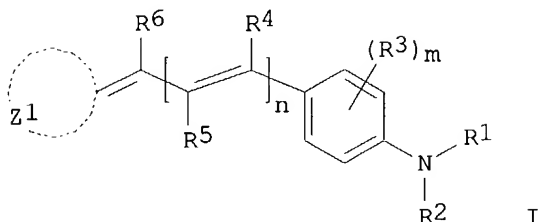
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 25, 41

FAN.CNT 2

*Applicant*

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000297068	A2	20001024	JP 1999-237266	19990824
	US 6689491	B1	20040210	US 2000-499460	20000207
PRAI	JP 1999-30190	A	19990208		
	JP 1999-66923	A	19990312		

JP 1999-209820 A 19990723  
 JP 1999-237266 A 19990824  
 OS MARPAT 133:303297  
 GI



AB The material is represented by I [R1, R2 = aryl, heterocycle, alicyclic group (R1 and/or R2 = aryl or heterocycle); R3 = substituents; m = 0-4; R4-6 = H, substituents; Z1 = 5-7-membered ring; n = 0-2]. The triarylamine compound is styrylamine derivative II (R91, R92 = aryl, heterocycle; R93 = substituents; R94 = H, alkyl, alkenyl, acyl, sulfonyl, alkoxy carbonyl, carbonamido, cyano; Z9 = substituted 1,3-indandione, furanone, oxindole, etc.). The electroluminescent **device**, showing high-luminance display without dark spots, has a (polymer) layer dispersing the above compound

ST electroluminescent **device** arylamine dark spot prevention; styrylamine fluorescent dye electroluminescent **device**; indanone nuclei styrylamine electroluminescent dye

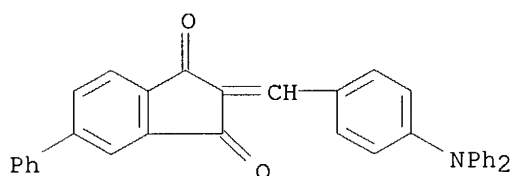
IT Amines, uses  
 RL: **DEV (Device component use)**; PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)  
 (aromatic, fluorescent dye; organic electroluminescent **device** including styrylamine derivative and showing high-luminance display)

IT Electroluminescent devices  
 Fluorescent dyes  
 (organic electroluminescent **device** including styrylamine derivative and showing high-luminance display)

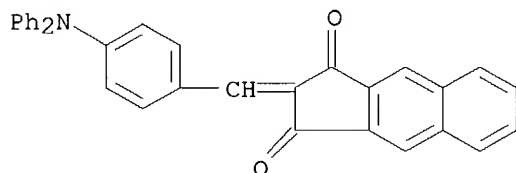
IT 25067-59-8, Poly(N-vinylcarbazole)  
 RL: **DEV (Device component use)**; USES (Uses)  
 (emission layer; organic electroluminescent **device** including styrylamine derivative and showing high-luminance display)

IT 5694-20-2DP, Styrylamine, derivative **301301-22-4P**  
**301301-23-5P 301301-24-6P 301301-25-7P**  
**301301-26-8P**  
 RL: **DEV (Device component use)**; PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)  
 (fluorescent dye; organic **electroluminescent device**

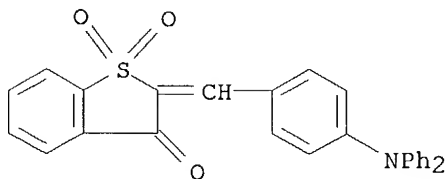
including styrylamine derivative and showing high-luminance display)  
 IT 4181-05-9, 4-(N,N-Diphenylamino)benzaldehyde 50919-76-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in preparation of styrylamine derivative for fluorescent dye in  
 electroluminescent device)  
 IT 301301-22-4P 301301-23-5P 301301-24-6P  
 301301-25-7P  
 RL: DEV (Device component use); PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)  
 (fluorescent dye; organic electroluminescent device  
 including styrylamine derivative and showing high-luminance display)  
 RN 301301-22-4 HCAPLUS  
 CN 1H-Indene-1,3(2H)-dione, 2-[[4-(diphenylamino)phenyl]methylene]-5-phenyl-  
 (9CI) (CA INDEX NAME)



RN 301301-23-5 HCAPLUS  
 CN 1H-Benz[f]indene-1,3(2H)-dione, 2-[[4-(diphenylamino)phenyl]methylene]-  
 (9CI) (CA INDEX NAME)

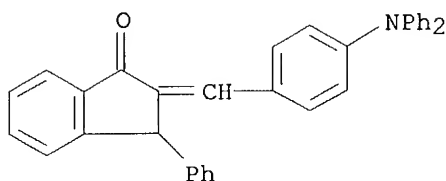


RN 301301-24-6 HCAPLUS  
 CN Benzo[b]thiophen-3(2H)-one, 2-[[4-(diphenylamino)phenyl]methylene]-,  
 1,1-dioxide (9CI) (CA INDEX NAME)



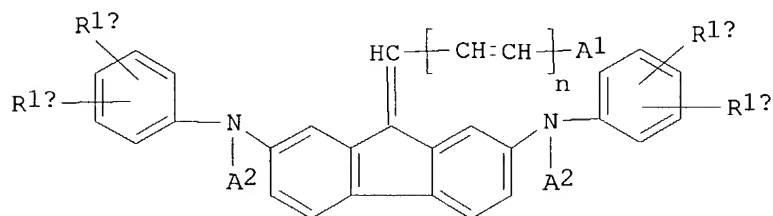
RN 301301-25-7 HCAPLUS  
 CN 1H-Inden-1-one, 2-[[4-(diphenylamino)phenyl]methylene]-2,3-dihydro-3-  
 phenyl- (9CI) (CA INDEX NAME)





L33 ANSWER 14 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:342606 HCAPLUS  
 DN 132:340981  
 ED Entered STN: 23 May 2000  
 TI 2,7-Diamino-9-fluorenylidene derivatives and organic electroluminescent devices  
 IN Enomoto, Kazuhiro; Ogura, Takashi  
 PA Sharp Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 19 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C07C211-61  
 ICS C07C217-92; C07D207-33; C07D209-86; C07D213-38; C07D215-12;  
 C07D307-52; C07D307-81; C07D333-20; C09K011-06; G03G005-06;  
 H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000143591	A2	20000523	JP 1998-325253	19981116
PRAI	JP 1998-325253		19981116		
OS	MARPAT 132:340981				
GI					



I

AB 2,7-Diamino-9-fluorenylidene derivs. I [A1 = (un)substituted aryl, lower alkyl, heterocycle; A2 = H, (un)substituted aryl, lower alkyl, (un)substituted aralkyl; n = 0, 1; R1a, R1b = H, halo, (un)substituted aryl, lower alkyl, lower alkoxy; neighboring R1a and R1b may form O-containing 5- or 6-membered ring] are claimed. Further specification of the variables and Markush structures for electron barrier layers are also given. Organic electroluminescent **device** comprising of a hole-injection/transportation layer containing I, a light-emitting layer, a pair of electrodes, and a substrate is also claimed. The devices show

high luminosity under low driving voltage.

ST aminofluorenylidene hole injection transportation layer EL; EL  
**device** aminofluorenylidene deriv; electroluminescent  
**device** aminofluorenylidene deriv; arom amine electron barrier EL  
**device**; enamine arom electron barrier EL **device**

IT Amines, uses  
 Enamines  
 RL: **DEV (Device component use)**; USES (Uses)  
 (aromatic, electron barrier layers; diaminofluorenylidene derivs. and  
 organic  
 electroluminescent devices having low driving voltage)

IT Electroluminescent devices  
 (diaminofluorenylidene derivs. and organic electroluminescent devices  
 having low driving voltage)

IT 5405-53-8P, 2,7-Dinitrofluorene 65550-83-6P 109805-03-0P  
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (diaminofluorenylidene derivs. and organic electroluminescent devices  
 having low driving voltage)

IT 86-73-7, Fluorene 100-52-7, Benzaldehyde, reactions 591-50-4,  
 Iodobenzene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (diaminofluorenylidene derivs. and organic electroluminescent devices  
 having low driving voltage)

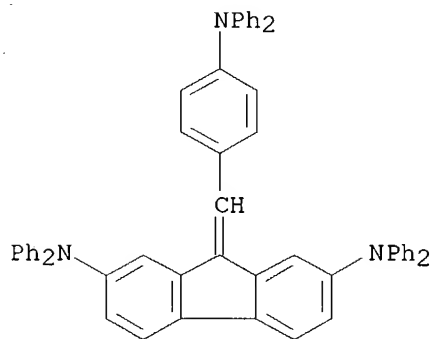
IT 267881-36-7 267881-37-8 267881-38-9 267881-39-0 267881-40-3  
 RL: **DEV (Device component use)**; USES (Uses)  
 (electron barrier layers; diaminofluorenylidene derivs. and organic  
 electroluminescent devices having low driving voltage)

IT 267881-32-3P 267881-33-4P **267881-34-5P 267881-35-6P**  
 RL: **DEV (Device component use)**; IMF (Industrial manufacture);  
 PREP (Preparation); USES (Uses)  
 (hole-injection/transportation layer; diaminofluorenylidene derivs. and  
 organic **electroluminescent** devices having low driving voltage)

IT **267881-34-5P 267881-35-6P**  
 RL: **DEV (Device component use)**; IMF (Industrial manufacture);  
 PREP (Preparation); USES (Uses)  
 (hole-injection/transportation layer; diaminofluorenylidene derivs. and  
 organic **electroluminescent** devices having low driving voltage)

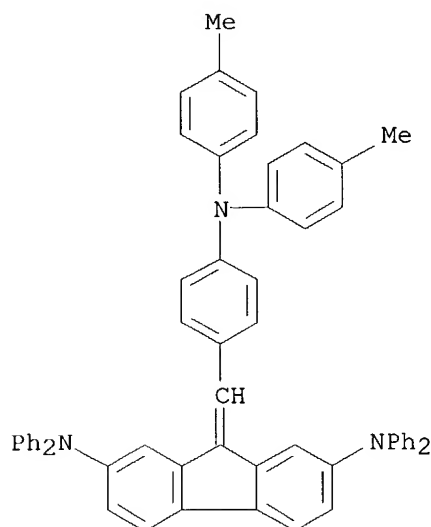
RN 267881-34-5 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9-[[4-(diphenylamino)phenyl]methylene]-N,N,N',N'-  
 tetraphenyl- (9CI) (CA INDEX NAME)



RN 267881-35-6 HCAPLUS

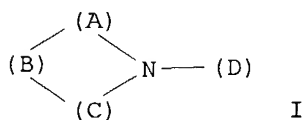
CN 9H-Fluorene-2,7-diamine, 9-[[4-[bis(4-methylphenyl)amino]phenyl]methylene]-  
N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



L33 ANSWER 15 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2000:254786 HCAPLUS  
DN 132:286141  
ED Entered STN: 21 Apr 2000  
TI Organic electroluminescent **device**  
IN Sato, Tadahisa; Hara, Shintaro; Komatsu, Takahiro  
PA Fuji Photo Film Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.  
SO Jpn. Kokai Tokkyo Koho, 53 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H05B033-14  
ICS C09K011-06; H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000113985	A2	20000421	JP 1999-89797	19990330
	US 6436558	B1	20020820	US 1999-253697	19990222
PRAI	JP 1998-224607	A	19980807		
OS	MARPAT 132:286141				
GI					



AB An organic electroluminescent **device** comprises an azole derivative and an organic compound having the structure represented by I [(A), (B), and (C) = o-arylene, vinylene, and ethylene; (D) = alkyl, aryl, and aromatic heterocyclic group].

ST org electroluminescent **device** optical imaging app

IT Electroluminescent devices

Optical imaging devices

(organic electroluminescent **device**)

IT 68-12-2, Dimethylformamide, reactions 121-43-7, Trimethylborate  
121-88-0, 2-Amino-5-nitrophenol 256-96-2, 5H-Dibenz[b,f]azepine  
589-87-7, 1-Bromo-4-iodobenzene 619-58-9, 4-Iodobenzoic acid  
1199-46-8, 2-Amino-4-t-butylphenol 2351-37-3, 4,4'-  
Biphenyldicarbonylchloride 3001-15-8, 4,4'-Diiodobiphenyl 4181-20-8,  
Tris(4-iodophenyl)amine 4282-31-9, Thiophene-2,5-dicarboxylic acid  
4422-95-1, 1,3,5-Benzenetricarbonyl trichloride 7719-09-7, Thionyl  
chloride 16694-18-1, 4-Bromothiophene-2-carboxylic acid 27329-60-8,  
Diethyl diphenylmethylphosphonate 29875-73-8, 9H-Tribenz[b,d,f]azepine  
220745-29-9 220745-38-0 220745-41-5 220745-42-6 220745-46-0  
247075-12-3 263906-31-6 263906-34-9

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic electroluminescent **device**)

IT 3857-36-1P, Thiophene-2,5-dicarboxylic acid chloride 50446-44-1P  
204200-08-8P 204200-10-2P 204200-11-3P 218272-57-2P 218272-58-3P  
218926-20-6P **218926-22-8P 218926-23-9P** 220745-28-8P  
220745-39-1P 243859-38-3P 243859-45-2P 245737-27-3P 247075-10-1P  
247075-11-2P 247075-14-5P 252254-12-9P 252254-65-2P 252255-04-2P  
252256-53-4P 263905-65-3P 263906-33-8P 263906-35-0P 263906-37-2P  
263906-41-8P 263906-42-9P 263906-43-0P

RL: SPN (Synthetic preparation); PREP (Preparation)

(organic electroluminescent **device**)

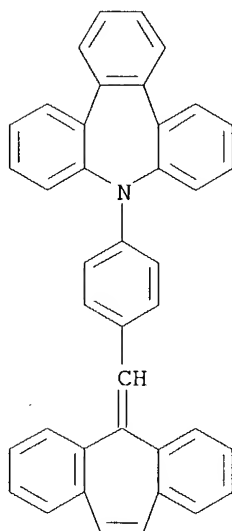
IT **218926-22-8P 218926-23-9P**

RL: SPN (Synthetic preparation); PREP (Preparation)

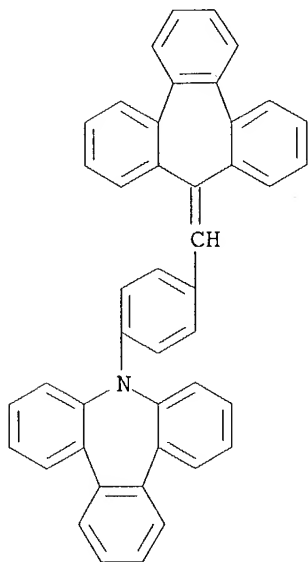
(organic electroluminescent **device**)

RN 218926-22-8 HCAPLUS

CN 9H-Tribenz[b,d,f]azepine, 9-[4-(5H-dibenzo[a,d]cyclohepten-5-ylidenemethyl)phenyl]- (9CI) (CA INDEX NAME)



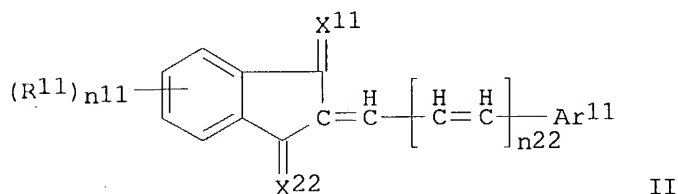
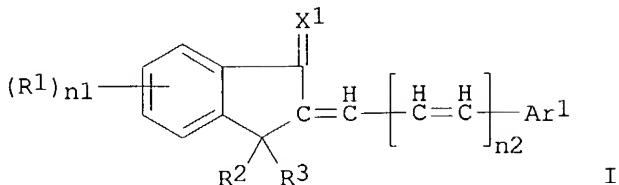
RN 218926-23-9 HCAPLUS  
 CN 9H-Tribenz[b,d,f]azepine, 9-[4-(9H-tribenzo[a,c,e]cyclohepten-9-ylidenemethyl)phenyl]- (9CI) (CA INDEX NAME)



L33 ANSWER 16 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1999:756250 HCAPLUS  
 DN 132:16980  
 ED Entered STN: 30 Nov 1999  
 TI Organic electroluminescent **device** emitting high luminance light  
 at low operation voltage  
 IN Hashimoto, Mitsuru; Suzuki, Mutsumi; Fukuyama, Masao  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 50 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H05B033-14  
 ICS C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 25

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11329728	A2	19991130	JP 1998-128552	19980512
PRAI	JP 1998-128552		19980512		
OS	MARPAT 132:16980				
GI					



AB The organic EL **device** contains a methyldiene indan derivative I or II [R1, R11 = (substituted) aromatic hydrocarbon residue, alkyl, alkoxy, amino, nitro, cyano, halo, carboxyl (ester); R2, R3, R22, R33 = H, (substituted) aromatic hydrocarbon residue, alkyl; Ar1, Ar11 = (substituted) aromatic hydrocarbon residue, aromatic heterocyclic hydrocarbon residue; X1, X11, X22 = O, S, dicyanomethylene, cyanocarboxymethylene (ester), dicarboxymethylene (ester); n1, n2, n11, n22 = integer of 0-4; R1 may be different when n1 = 2-4; R11 may be different when n11 = 2-4]. By including the methyldiene indan derivative as a dopant, emission efficiency and service life of the **device** are improved.

ST org electroluminescent **device** dopant methyldiene indan

IT Electroluminescent devices

(organic electroluminescent **device** containing methyldiene indan derivative as dopant)

IT 21889-13-4 29874-39-3

RL: DEV (Device component use); MOA (Modifier or additive use);

USES (Uses)

(organic **electroluminescent device** containing methyldiene indan derivative as dopant)

IT 21889-13-4 29874-39-3

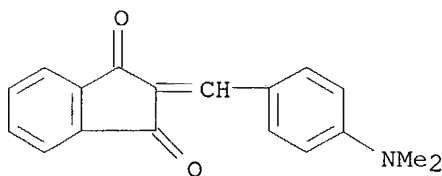
RL: DEV (Device component use); MOA (Modifier or additive use);

USES (Uses)

(organic **electroluminescent device** containing methyldiene indan derivative as dopant)

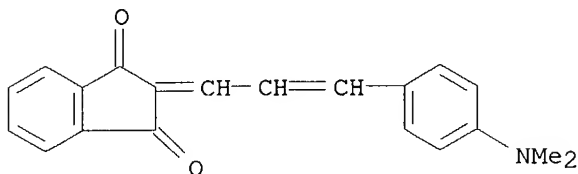
RN 21889-13-4 HCAPLUS

CN 1H-Indene-1,3(2H)-dione, 2-[[4-(dimethylamino)phenyl]methylene]- (9CI)  
(CA INDEX NAME)



RN 29874-39-3 HCAPLUS

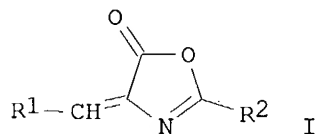
CN 1H-Indene-1,3(2H)-dione, 2-[3-[4-(dimethylamino)phenyl]-2-propenylidene]-(9CI) (CA INDEX NAME)



L33 ANSWER 17 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1999:638520 HCAPLUS  
 DN 131:250228  
 ED Entered STN: 08 Oct 1999  
 TI Organic electroluminescent material for electroluminescent **device**  
 IN Tanaka, Taizo  
 PA NEC Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H05B033-14  
 ICS C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74

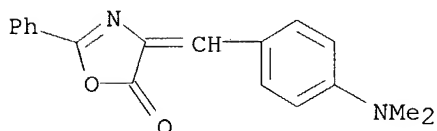
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11273865	A2	19991008	JP 1998-92223	19980323
	JP 3092583	B2	20000925		
	TW 417407	B	20010101	TW 1999-88104484	19990322
PRAI	JP 1998-92223	A	19980323		
OS	MARPAT 131:250228				
GI					

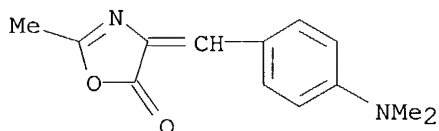


AB An organic electroluminescent material, suited for use in making a red-emitting electroluminescent **device**, comprises oxazolone derivs. represented by I [R1,2 = H, halo, OH, amino, NO2, CN, alkyl, etc.].  
 ST org electroluminescent **device** oxazolone deriv  
 IT Phosphors  
 (electroluminescent, oxazolone derivs.; organic electroluminescent material for red-emitting electroluminescent **device**)  
 IT Electroluminescent devices  
 (organic electroluminescent material for red-emitting electroluminescent

device)  
 IT 1564-29-0 1787-23-1  
 RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent material for red-emitting  
 electroluminescent device).  
 IT 100-10-7, p-Dimethylaminobenzaldehyde 495-69-2, Hippuric acid  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic electroluminescent material for red-emitting electroluminescent  
 device)  
 IT 1564-29-0 1787-23-1  
 RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent material for red-emitting  
 electroluminescent device)  
 RN 1564-29-0 HCAPLUS  
 CN 5(4H)-Oxazolone, 4-[[4-(dimethylamino)phenyl]methylene]-2-phenyl- (9CI)  
 (CA INDEX NAME)



RN 1787-23-1 HCAPLUS  
 CN 5(4H)-Oxazolone, 4-[[4-(dimethylamino)phenyl]methylene]-2-methyl- (9CI)  
 (CA INDEX NAME)

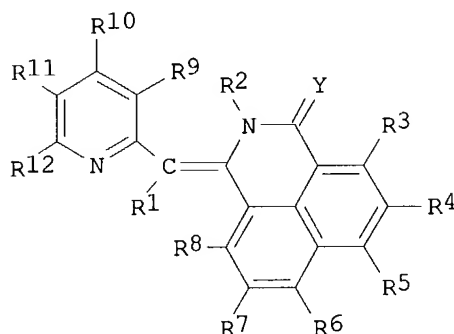


L33 ANSWER 18 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1999:365799 HCAPLUS  
 DN 131:65642  
 ED Entered STN: 14 Jun 1999  
 TI Naphthalenedicarboximide derivative organic phosphor and  
 electroluminescent device and fluorescent ink using it  
 IN Shimamura, Takehiko; Ito, Naoto  
 PA Mitsui Chemicals Inc., Japan  
 SO Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS H05B033-14; C07D401-06  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 42  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 11152467 A2 19990608 JP 1997-321400 19971121  
 PRAI JP 1997-321400 19971121  
 OS MARPAT 131:65642  
 GI



AB The phosphor is a 1,8-naphthalenedicarboximide derivative I [R1, R2 = H, (substituted) alkyl, (substituted) aryl; R3-12 = H, halo, OH, SH, cyano, amino, NO2, (substituted) alkyl, (substituted) alkoxy, (substituted) alkylthio, (substituted) N-monoalkylamino, (substituted) aryl, (substituted) aryloxy, (substituted) arylthio, (substituted) heterocycle; neighboring groups of R3-12 may form ring(s); Y = O, S, dicyanomethylene]. The electroluminescent **device** contains I in a light-emitting layer. The fluorescent ink contains I. The phosphor gives white emission in a wide wavelength range.

ST naphthalenedicarboximide phosphor electroluminescent **device**;  
 fluorescent ink white naphthalenedicarboximide phosphor; EL **device**  
 white emission naphthalenedicarboximide phosphor

IT Inks  
 Inks

(fluorescent; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT Fluorescent substances  
 Fluorescent substances  
 (inks; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT Electroluminescent devices  
 Phosphors  
 (naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 227937-89-5P 227937-91-9P  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 226910-86-7 227937-94-2 227937-96-4 227937-98-6 227938-00-3  
 227938-02-5 227938-04-7 227938-06-9 227938-08-1 227938-10-5  
 227938-11-6 227938-13-8 **227938-15-0** 227938-17-2

227938-18-3 227938-19-4 227938-21-8 227938-23-0 227938-25-2  
227938-27-4

RL: TEM (Technical or engineered material use); USES (Uses)  
(naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for **electroluminescent device** and fluorescent ink)

IT 39061-35-3, 4-Nitronaphthalene-1,8-dicarboximide

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with isopropylmethylquinoline and malononitrile; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 109-77-3, Malononitrile

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with naphthalenedicarboximides and isopropylmethylquinoline; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 75403-09-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with naphthalenedicarboximides and malononitrile; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 91-63-4, Quinaldine

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with naphthalenedicarboximides; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 81-83-4, Naphthalene-1,8-dicarboximide

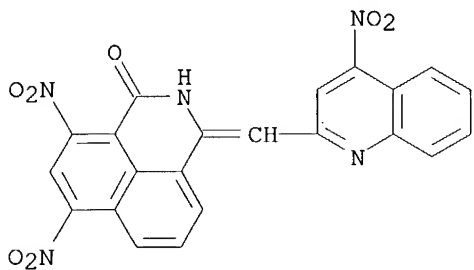
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with quinaldine; naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for electroluminescent **device** and fluorescent ink)

IT 227938-15-0

RL: TEM (Technical or engineered material use); USES (Uses)  
(naphthalenedicarboximide derivative organic phosphor with white emission in wide wavelength range for **electroluminescent device** and fluorescent ink)

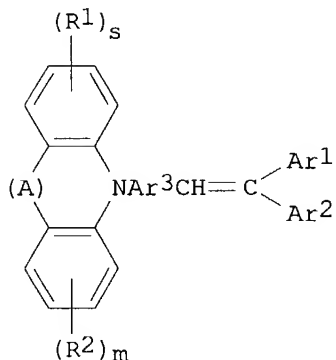
RN 227938-15-0 HCAPLUS

CN 1H-Benz[de]isoquinolin-1-one, 2,3-dihydro-7,9-dinitro-3-[(4-nitro-2-quinolinyl)methylene]- (9CI) (CA INDEX NAME)



AN 1998:795468 HCAPLUS  
 DN 130:81430  
 ED Entered STN: 21 Dec 1998  
 TI Preparation of azepine-containing trisubstituted ethylenes as charge transporting agents  
 IN Sato, Tadahisa  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C07D223-14  
 ICS C07D491-048; G03G005-06; C09K011-06  
 CC 27-21 (Heterocyclic Compounds (One Hetero Atom))  
 Section cross-reference(s): 74  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10330365	A2	19981215	JP 1997-140584	19970529
PRAI	JP 1997-140584		19970529		
OS	MARPAT 130:81430				
GI					



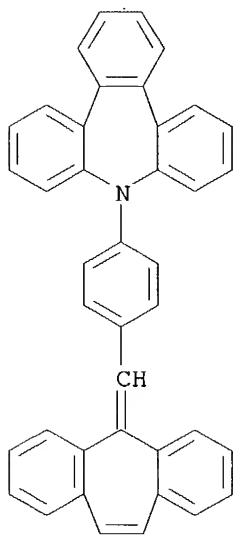
I

AB Title compds. I (A = o-arylene; Ar1, Ar2 = aryl; Ar3 = arylene; R1, R2 = halo, alkyl, aryl, alkoxy, aryloxy, dialkylamino, N-alkyl-N-arylamino, diarylamino; s, m = 0-4) are prepared as charge transporting agents for electrophotog. photoreceptors or electroluminescent devices (no data). 9H-tribenz[b,d,f]azepine was treated with p-BrC6H4I in the presence of KOH and Cu in decalin at 200° for .apprx.1 wk to give 52% 9-(4-bromophenyl)tribenz[b,d,f]azepine, which was lithiated by BuLi and formylated by DMF in THF at -78° to room temperature to give 75% 9-(4-formylphenyl)-9H-tribenz[b,d,f]azepine. Condensation of the aldehyde with Ph2CHP(O)(OEt)2 using t-BuOK in DMSO at room temperature for .apprx.10 h gave 70% I (A = o-C6H4, Ar1 = Ar2 = Ph, Ar3 = p-C6H4, s = m = 0).

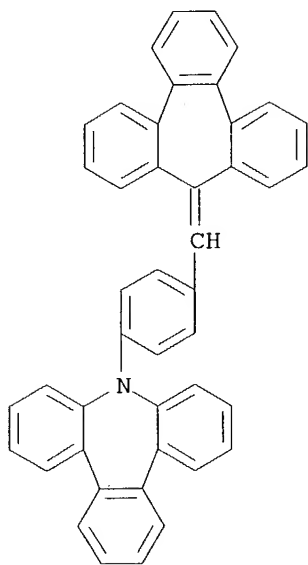
ST azepine triarylethylene prepn charge transporting agent; ethylene triaryl azepine prepn; electrophotog photoreceptor azepine triarylethylene prepn; electroluminescent **device** azepine triarylethylene prepn

IT Electroluminescent devices  
 Electrophotographic photoconductors (photoreceptors)  
 (preparation of azepine-containing triarylethylenes as charge transporting agents for electrophotog. photoreceptors or electroluminescent devices)

- IT 218926-20-6P 218926-21-7P **218926-22-8P 218926-23-9P**  
 218926-24-0P  
 RL: **DEV (Device component use)**; SPN (Synthetic preparation); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (preparation of azepine-containing triarylethylenes as charge transporting  
 agents for electrophotog. photoreceptors or **electroluminescent**  
 devices)
- IT 589-87-7, 1-Bromo-4-iodobenzene 2222-33-5, 5H-Dibenzo[a,d]cyclohepten-5-  
 one 27329-60-8, Diethyl diphenylmethylphosphonate 29875-73-8,  
 9H-Tribenz[b,d,f]azepine 68089-73-6, 9H-Tribenzo[a,c,e]cyclohepten-9-one  
 134310-85-3 147845-84-9 149685-13-2  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of azepine-containing triarylethylenes as charge transporting  
 agents for electrophotog. photoreceptors or electroluminescent devices)
- IT 10354-00-4P, 5H-Dibenzo[a,d]cyclohepten-5-ol 218272-57-2P 218272-58-3P  
 218926-27-3P 218926-28-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation of azepine-containing triarylethylenes as charge transporting  
 agents for electrophotog. photoreceptors or electroluminescent devices)
- IT **218926-22-8P 218926-23-9P**  
 RL: **DEV (Device component use)**; SPN (Synthetic preparation); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (preparation of azepine-containing triarylethylenes as charge transporting  
 agents for electrophotog. photoreceptors or **electroluminescent**  
 devices)
- RN 218926-22-8 HCAPLUS  
 CN 9H-Tribenz[b,d,f]azepine, 9-[4-(5H-dibenzo[a,d]cyclohepten-5-  
 ylidene)methyl]phenyl]- (9CI) (CA INDEX NAME)



- RN 218926-23-9 HCAPLUS  
 CN 9H-Tribenz[b,d,f]azepine, 9-[4-(9H-tribenzo[a,c,e]cyclohepten-9-  
 ylidene)methyl]phenyl]- (9CI) (CA INDEX NAME)



L33 ANSWER 20 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1998:336226 HCAPLUS  
 DN 129:46938  
 ED Entered STN: 05 Jun 1998  
 TI White light emitting electroluminescence devices with organic oligomers  
 AU Meghdadi, F.; Tasch, S.; Graupner, W.; Dottinger, S. E.; Hanack, M.;  
 Graupner, M.; Hermetter, A.; Leising, G.  
 CS Institut für Festkörperphysik, Technische Universität Graz, Graz, A-8010,  
 Austria  
 SO Materials Research Society Symposium Proceedings (1998), 488 (Electrical,  
 Optical, and Magnetic Properties of Organic Solid-State Materials IV),  
 27-32  
 CODEN: MRSPDH; ISSN: 0272-9172  
 PB Materials Research Society  
 DT Journal  
 LA English  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 76  
 AB We report on the properties of white light emitting electroluminescence  
 (EL) devices fabricated by combining blue and orange light emitting organic  
 materials, parahexaphenyl (PHP) and a new isothianaphthen-S-oxide derivative  
 oligomer (ITSO). The EL spectrum of this oligomer blend covers the range  
 from 400 to 650 nm. When the concentration ratios of these materials are  
 suitably adjusted a pure white light emission (CIE coordinates of  $x =$   
 $0.333$  and  $y = 0.338$ ) and a high external EL quantum efficiency of 1.2%  
 photons/electron can be obtained. Organic light emitting devices (OLEDs)  
 were formed by co-deposition of ITSO and PHP onto ITO using two Knudsen  
 cells under high vacuum conditions, using aluminum as the top electrode.  
 ITSO concns. of 4-40% in PHP were investigated, white emission being  
 obtained for 4% ITSO. The mechanism of the white light generation is  
 ascribed to an internal self-absorption of part of the blue PHP light  
 emission by ITSO and a subsequent photoluminescence emission process of  
 ITSO. The results of photoinduced absorption, which is sensitive to

charged species and triplet states of these guest-host systems, are discussed.

ST white electroluminescence hexaphenyl thianaphthene oxide deriv  
IT UV and visible spectra  
(absorption; of 1,3-bis-[1-dimethylamino) phenylenevinylene  
methyliden]-1,3-dihydro-isothianaphthen-2-oxide used in white LED)  
IT Photoinduced optical absorption  
(of 1,3-bis-[1-dimethylamino) phenylenevinylene methyliden]-1,3-dihydro-  
isothianaphthen-2-oxide used in white LED)  
IT Luminescence, electroluminescence  
(white emission from oligomer blends of parahexaphenyl and  
isothianaphthen-S-oxide derivative)  
IT Electric current-potential relationship  
Electroluminescent devices  
(white-emitting electroluminescent devices using oligomer blends of  
p-hexaphenyl and isothianaphthen-S-oxide derivative)  
IT 4499-83-6, p-Hexaphenyl **208264-32-8**  
RL: **DEV (Device component use)**; PEP (Physical, engineering or  
chemical process); PRP (Properties); PROC (Process); USES (Uses)  
(white-emitting **electroluminescent** devices using oligomer  
blends of p-hexaphenyl and isothianaphthen-S-oxide derivative)

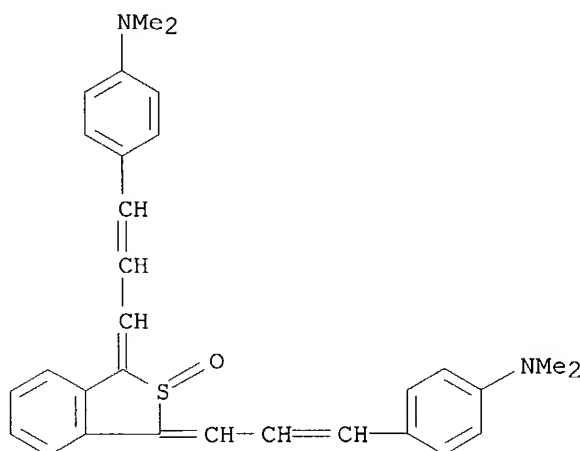
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

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- (2) Cava, M; J Org Chem 1971, V36, P3932 HCAPLUS
- (3) Era, M; Appl Phys Lett 1995, V67, P2436 HCAPLUS
- (4) Froyer, G; FR 9008091 1990
- (5) Graupner, W; Mol Cryst Liq Cyst 1994, V265, P54
- (6) Graupner, W; Synth Met 1997, V84, P507 HCAPLUS
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- (17) Stampfl, J; Synth Met 1995, V71, P2125 HCAPLUS
- (18) Tasch, S; Adv Mat 1997, V9, P33 HCAPLUS
- (19) Tasch, S; Appl Phys Lett 1997, V71, P2883 HCAPLUS
- (20) Wu, C; Appl Phys Letter 1996, V69, P3117 HCAPLUS

IT **208264-32-8**  
RL: **DEV (Device component use)**; PEP (Physical, engineering or  
chemical process); PRP (Properties); PROC (Process); USES (Uses)  
(white-emitting **electroluminescent** devices using oligomer  
blends of p-hexaphenyl and isothianaphthen-S-oxide derivative)

RN 208264-32-8 HCAPLUS

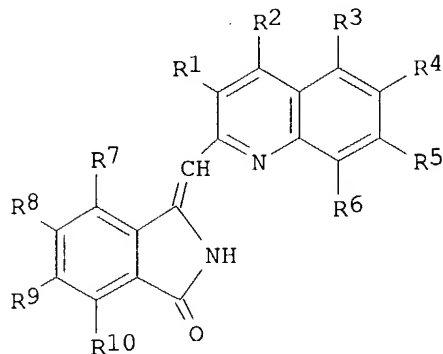
CN Benzenamine, 4,4'-[(2-oxidobenzo[c]thiophene-1,3-diylidene)di-1-propen-1-  
yl-3-ylidene]bis[N,N-dimethyl- (9CI) (CA INDEX NAME)



L33 ANSWER 21 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1998:129459 HCAPLUS  
 DN 128:141999  
 ED Entered STN: 04 Mar 1998  
 TI Quinoline derivatives, their zinc complexes, their preparation and use as  
 electroluminescent materials  
 IN Okuma, Tadashi; Ogiso, Akira; Ikuta, Hideki; Ito, Hisato; Nagayoshi,  
 Tatsuya  
 PA Mitsui Toatsu Chemicals, Inc., Japan  
 SO Eur. Pat. Appl., 44 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC C09B057-04; C07D401-06; C09K011-06; H05B033-14  
 CC 41-6 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic  
 Sensitizers)  
 Section cross-reference(s): 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 818512	A1	19980114	EP 1997-110593	19970627
	EP 818512	B1	20021002		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	US 6132640	A	20001017	US 1997-877913	19970618
	JP 10226691	A2	19980825	JP 1997-167461	19970624
	US 6407242	B1	20020618	US 2000-643249	20000822
PRAI	JP 1996-168860	A	19960628		
	JP 1996-168861	A	19960628		
	JP 1996-268592	A	19961009		
	JP 1996-325402	A	19961205		
	JP 1996-332135	A	19961212		
	US 1997-877913	A3	19970618		
OS	MARPAT 128:141999				
GI					



- AB The fluorescent quinoline derivs. I [R1-R10 = H, halogen, CN, (un)substituted amino, (un)substituted C>1 alkyl, (un)substituted aryl, (un)substituted alkoxy or aryloxy] and their tautomers are useful in electroluminescent elements. Their 2:1 Zn complexes and dimeric Zn halide complexes, in which the R1-R10 may also be NO<sub>2</sub>, are useful as UV absorbers. Thus, 72.3 g ZnCl<sub>2</sub> was added to a suspension of 6-isopropylquinoline 92.5 and 3-nitrophthalimide (II) 48 in PhNMe<sub>2</sub> 384 g and the mixture was heated 10 h at 150°, poured into 10% aqueous HCl, heated 1 h at 100°, cooled and filtered to give 75% (based on II) I (R1-R3 = R5-R9 = H, R4 = iso-Pr, R10 = NO<sub>2</sub>), which, in a poly(ethylene terephthalate) film, showed fluorescence with emission at 520 nm and activation at 375 nm.
- ST quinolinylmethyleindolone electroluminescent element; quinoline methine dye fluorescent
- IT Fluorescent dyes  
UV stabilizers  
(preparation of quinoline derivs. as)
- IT Electroluminescent devices  
(preparation of quinoline derivs. for use as electroluminescent materials in)
- IT 13481-47-5P  
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(preparation of fluorescent quinoline derivs.)
- IT 202262-66-6P 202284-76-2P 202284-77-3P 202284-78-4P 202284-79-5P  
202284-80-8P 202284-81-9P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of fluorescent quinoline derivs.)
- IT 202262-67-7P 202262-68-8P 202262-69-9P 202262-70-2P 202262-71-3P  
202262-72-4P  
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(preparation of quinoline derivative zinc complexes as UV absorbers)
- IT 202262-58-6P  
RL: **DEV (Device component use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
(preparation of quinoline derivs. for use as electroluminescent materials)
- IT **202262-60-0P**



RL: **DEV (Device component use)**; IMF (Industrial manufacture);  
 RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES  
 (Uses)

(preparation of quinoline derivs. for use as **electroluminescent**  
 materials)

IT 202262-57-5P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
 use); PREP (Preparation); USES (Uses)

(preparation of quinoline derivs. for use as electroluminescent materials)

IT 91-66-7, N,N-Diethylaniline 119-65-3, Isoquinoline 121-69-7,  
 N,N-Dimethylaniline, uses

RL: NUU (Other use, unclassified); USES (Uses)

(preparation of quinoline derivs. for use as electroluminescent materials)

IT 85-41-6, Phthalimide 91-63-4, Quinaldine 92-46-6, 6-Chloroquinaldine  
 92-99-9, 6-(Dimethylamino)quinaldine 603-62-3, 3-Nitrophthalimide  
 613-21-8, 6-Hydroxyquinaldine 1571-13-7, 3,4,5,6-Tetrachlorophthalimide  
 40314-06-5, 4-Methylphthalimide 41709-83-5, 3-Methoxyphthalimide  
 41709-84-6 50727-06-5, 4-Hydroxyphthalimide 73013-69-1 75403-09-7,  
 6-Isopropylquinaldine 90785-13-0, 5-Phenylquinaldine 90915-39-2,  
 4-(Dimethylamino)phthalimide 202262-59-7, 6-(Di-p-tolylamino)quinaldine  
 202262-61-1 202262-62-2 202262-63-3 202262-64-4 202262-65-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of quinoline derivs. for use as electroluminescent materials)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Badische Anilin- & Soda-Fabrik Ag; DE 1544646 A
- (2) Shinko Electric Industries Co Ltd; EP 0652274 A HCAPLUS
- (3) Tokushu Toryo Kk; JP 56147784 A HCAPLUS

IT 202262-60-0P

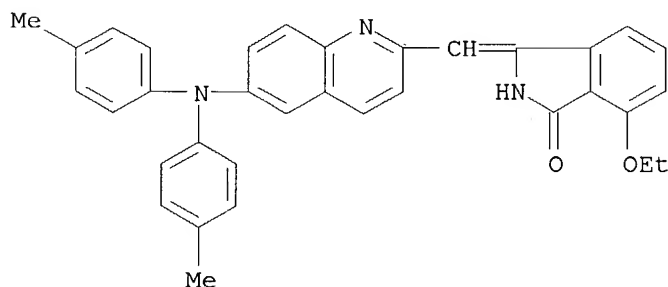
RL: **DEV (Device component use)**; IMF (Industrial manufacture);

RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES  
 (Uses)

(preparation of quinoline derivs. for use as **electroluminescent**  
 materials)

RN 202262-60-0 HCAPLUS

CN 1H-Isoindol-1-one, 3-[[6-[bis(4-methylphenyl)amino]-2-  
 quinolinyl]methylene]-7-ethoxy-2,3-dihydro- (9CI) (CA INDEX NAME)



L33 ANSWER 22 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1997:632131 HCAPLUS

DN 127:259755

ED Entered STN: 04 Oct 1997

TI Optochemical method and **device** to determine the concentration of  
 an analyte

IN Karpf, Hellfried; Kirchmayer, Gerald; Muntean, Georg  
 PA Avl Medical Instruments Ag, Switz.  
 SO Eur. Pat. Appl., 13 pp.  
 CODEN: EPXXDW

DT Patent

LA German

IC ICM G01N033-543

ICS G01N033-553; G01N033-58

ICA G01N021-64

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 15, 73, 80

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	EP 795752	A1	19970917	EP 1996-890047	19960313
	EP 795752	B1	20011010		
	R: DE, FR, GB				
	JP 09329603	A2	19971222	JP 1997-58211	19970313
	JP 2826725	B2	19981118		
PRAI	EP 1996-890047	A	19960313		

AB The title apparatus consists of a luminescence sensor with a biorecognition layer containing, e.g., proteins, antibodies, lipids, lectins, nucleic acids, artificial ligands, etc., for determining the concentration of  $\geq 1$  analyte in a sample. The sensor is also provided with a layer that contains discrete islands of elec. conductive material (e.g., gold, silver), and the biorecognition layer is positioned on the island layer either directly or indirectly by means of an intermediate layer. A first luminescent substance (e.g., a conjugate of a luminophor with a protein, antibody, hormone, lipid, DNA, RNA, etc.) is used that binds selectively to the analyte and that can either be added to the sample or be present in the sensor. The luminophors are selected from the group of triphenylmethane dyes as well as homo- and heterocyclic aromatic hydrocarbons. The biorecognition layer can bind, at least indirectly, to both the analyte and a second luminescent substance (e.g., a conjugate of a luminophor with a protein, antibody, hormone, lipid, DNA, RNA, etc.) that either is added to the sample or is present in the sensor, in connection with which the emission of at least one of the 2 luminescent substances near the island layer changes significantly, e.g., at least one of the luminescing substances contains a luminophor with a low quantum yield <70% that increases significantly near the island layer. A suitable **device** is provided for measuring the intensity of the luminescence from both luminescing substances.

ST multilayer test element luminescence biosensor immunosensor; immunoassay app luminescence biosensor

IT Proteins, specific or class

RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)

(G; luminescence biosensor with multilayer structure)

IT Immunoassay

(apparatus; luminescence biosensor with multilayer structure)

IT Biosensors

(immunosensors; luminescence biosensor with multilayer structure)

IT Electric conductors

Fluorescent dyes

Fluorescent substances

Immunoassay

Luminescent substances

(luminescence biosensor with multilayer structure)

IT Agglutinins and Lectins  
 Antibodies  
 Antigens  
 DNA  
 Hormones, animal, analysis  
 Ligands  
 Lipids, analysis  
 Nucleic acids  
 Proteins, general, analysis  
 RNA  
 RL: ANT (Analyte); ARG (Analytical reagent use); BPR (Biological process);  
 BSU (Biological study, unclassified); ANST (Analytical study); BIOL  
 (Biological study); PROC (Process); USES (Uses)

(luminescence biosensor with multilayer structure)

IT Aromatic hydrocarbons, uses  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)

(luminescence biosensor with multilayer structure)

IT Biosensors  
 (luminescence; luminescence biosensor with multilayer structure)

IT Agglutinins and Lectins  
 Antibodies  
 Antigens  
 DNA  
 Hormones, animal, biological studies  
 Ligands  
 Lipids, biological studies  
 Nucleic acids  
 Proteins, general, biological studies  
 RNA  
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU  
 (Biological study, unclassified); ANST (Analytical study); BIOL  
 (Biological study); PROC (Process); USES (Uses)

(luminophor conjugates; luminescence biosensor with multilayer structure)

IT Antibodies  
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU  
 (Biological study, unclassified); ANST (Analytical study); BIOL  
 (Biological study); PROC (Process); USES (Uses)

(monoclonal; luminescence biosensor with multilayer structure)

IT 519-73-3, Triphenylmethane  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)

(dyes; luminescence biosensor with multilayer structure)

IT 9001-15-4, Creatine kinase  
 RL: ANT (Analyte); ANST (Analytical study)

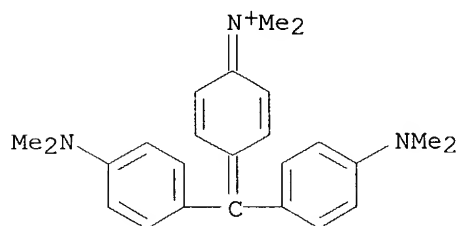
(luminescence biosensor with multilayer structure)

IT 85-01-8, Phenanthrene, uses 85-57-4D, Phthalein acid, derivs. 86-74-8,  
 Carbazole 91-22-5, Quinoline, uses 91-64-5, Coumarin 101-60-0,  
 Porphyrin 120-12-7, Anthracene, uses 129-00-0, Pyrene, uses  
 191-07-1, Coronene 191-24-2, Benzo[ghi]perylene 198-55-0, Perylene  
 260-94-6, Acridine 288-32-4, Imidazole, uses 548-62-9, Crystal  
 violet 569-64-2, Malachite green 603-34-9, Triphenylamine  
 632-99-5, Fuchsin 2321-07-5, Fluorescein 9003-99-0, Peroxidase  
 17372-87-1, Eosin  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)

(luminescence biosensor with multilayer structure)

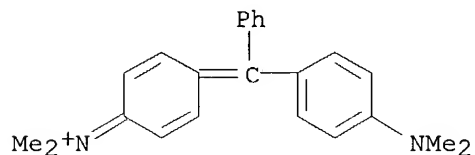
IT 7440-22-4, Silver, analysis 7440-57-5, Gold, analysis  
 RL: ARU (Analytical role, unclassified); DEV (Device component)

use); ANST (Analytical study); USES (Uses)  
 (luminescence biosensor with multilayer structure)  
 IT 548-62-9, Crystal violet 569-64-2, Malachite green  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (luminescence biosensor with multilayer structure)  
 RN 548-62-9 HCAPLUS  
 CN Methanaminium, N-[4-[bis[4-(dimethylamino)phenyl]methylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, chloride (9CI) (CA INDEX NAME)



● Cl<sup>-</sup>

RN 569-64-2 HCAPLUS  
 CN Methanaminium, N-[4-[[4-(dimethylamino)phenyl]phenylmethylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, chloride (9CI) (CA INDEX NAME)



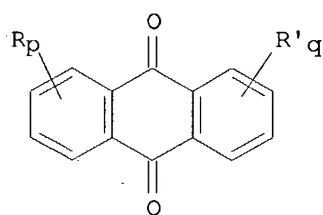
● Cl<sup>-</sup>

L33 ANSWER 23 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1996:434790 HCAPLUS  
 DN 125:99699  
 ED Entered STN: 23 Jul 1996  
 TI Electroluminescent **device** containing anthraquinone derivative or indandione derivative  
 IN Murakami, Mutsuaki; Fukuyama, Masao; Suzuki, Mutsumi; Hashimoto, Mitsuru  
 PA Matsushita Electric Ind Co Ltd, Japan  
 SO Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01L033-00  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

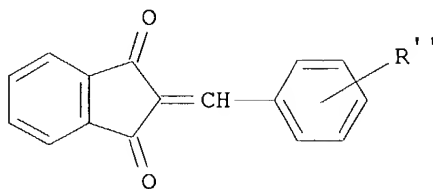
## Section cross-reference(s): 76

FAN.CNT 1

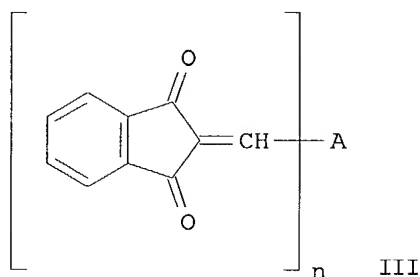
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08097465	A2	19960412	JP 1994-233832	19940928
PRAI	JP 1994-233832		19940928		
OS	MARPAT 125:99699				
GI					



I



II



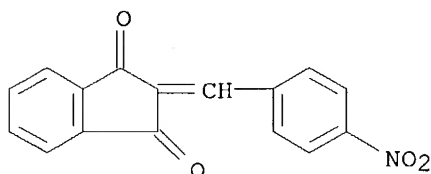
III

- AB The **device** contains an anthraquinone derivative I ( $R, R' = \text{alkyl, alkoxy, carbonyl, halo, NO}_2, \text{CN}; p, q = 1-4$ ) or an indandione derivative II or III ( $R'' = \text{alkyl, alkoxy, alkylamino, arylamino, NO}_2, \text{CN, CF}_3, \text{F, Cl, CO, butylcarbonyl, Ph}; A = \text{aryl, arylene}; n = 1-2$ ).
- ST electroluminescent **device** anthraquinone electron transporting;  
indandione electron transporting EL **device**
- IT Electroluminescent devices  
(electroluminescent **device** containing anthraquinone derivative or indandione derivative in electron-transporting layer)
- IT 84-47-9P 5381-33-9P 7421-76-3P 15875-51-1P 15875-54-4P  
15875-55-5P 15875-56-6P **15875-60-2P** 16210-62-1P  
16210-64-3P 18913-75-2P 19371-91-6P 25364-82-3P 31316-87-7P  
32358-72-8P 32358-73-9P 32712-59-7P **34200-53-8P**  
34200-56-1P 61499-33-0P 61499-34-1P **85299-18-9P**  
95219-75-3P 136758-25-3P 143413-01-8P 171972-36-4P 178697-87-5P  
178697-88-6P 178697-89-7P 178697-90-0P 178697-91-1P  
RL: **DEV (Device component use)**; IMF (Industrial manufacture);  
PREP (Preparation); USES (Uses)  
(electron-transporting agent; **electroluminescent device** containing anthraquinone derivative or indandione derivative in electron-transporting layer)
- IT 2085-33-8  
RL: **DEV (Device component use)**; USES (Uses)  
(light-emitting material; electroluminescent **device** containing anthraquinone derivative or indandione derivative in electron-transporting layer)
- IT **15875-60-2P 34200-53-8P 85299-18-9P**

RL: **DEV (Device component use)**; IMF (Industrial manufacture);  
 PREP (Preparation); USES (Uses)  
 (electron-transporting agent; **electroluminescent device** containing anthraquinone derivative or indandione derivative in electron-transporting layer)

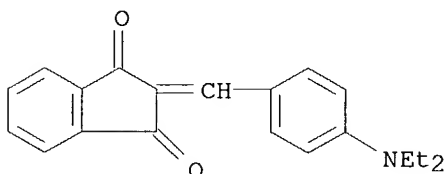
RN 15875-60-2 HCAPLUS

CN 1H-Indene-1,3(2H)-dione, 2-[(4-nitrophenyl)methylene]- (9CI) (CA INDEX NAME)



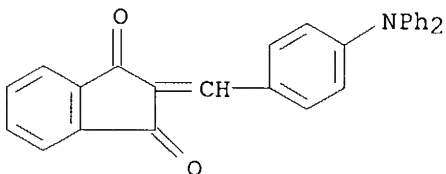
RN 34200-53-8 HCAPLUS

CN 1H-Indene-1,3(2H)-dione, 2-[[4-(diethylamino)phenyl]methylene]- (9CI) (CA INDEX NAME)



RN 85299-18-9 HCAPLUS

CN 1H-Indene-1,3(2H)-dione, 2-[[4-(diphenylamino)phenyl]methylene]- (9CI) (CA INDEX NAME)



L33 ANSWER 24 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1994:496254 HCAPLUS

DN 121:96254

ED Entered STN: 20 Aug 1994

TI Organic electroluminescence **device**

IN Suzuki, Shinichi; Shibata, Toyoko; Takeuchi, Shigeki

PA Konishiroku Photo Ind, Japan

SO Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

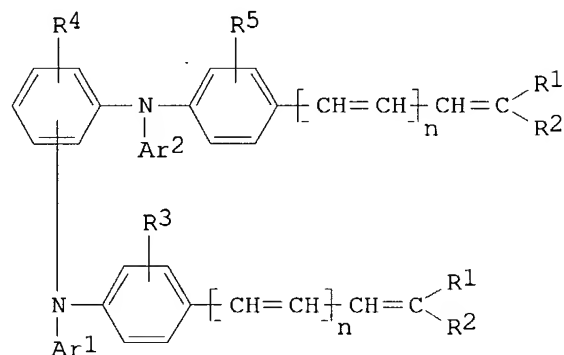
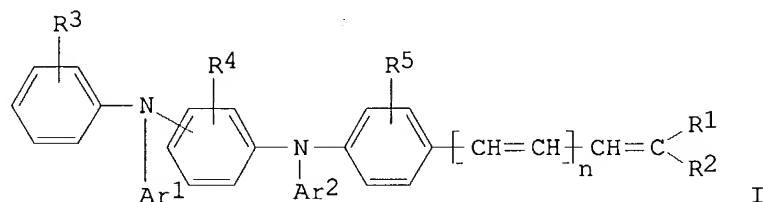
IC ICM C09K011-06

ICS H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06017046	A2	19940125	JP 1992-173177	19920630
PRAI	JP 1992-173177		19920630		
GI					



AB The title **device**, suited for use as a flat-panel display or a plane light source, comprises  $\geq 1$  layer containing I or II [R1, R3 = H, (substituted) alkyl, aryl, aralkyl, heterocyclyl, provided that R1 and R2 may not both be H, and R1 and R2 may together form a ring; R3, R4, R5 = H, halo, alkyl, alkoxy; Ar1, Ar2 = (substituted) alkyl, aryl, aralkyl; n = 0, 1].

ST org electroluminescence **device**

IT Electroluminescent devices  
 (organic, for display and light source)

IT 131312-28-2 **131312-29-3** 131312-31-7 131333-32-9  
 131660-34-9 131660-38-3 156204-52-3 156204-53-4 156204-54-5  
**156204-55-6** 156204-56-7 156204-57-8 156204-58-9  
 156204-59-0 156204-60-3 156204-61-4 **156204-62-5**  
 156204-63-6 156204-64-7 156204-65-8 156204-66-9 156204-67-0

RL: **DEV (Device component use); USES (Uses)**  
 (electroluminescent device from)

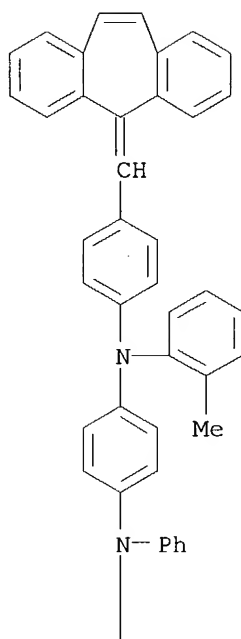
IT **131312-29-3 156204-55-6 156204-62-5**

RL: **DEV (Device component use); USES (Uses)**  
 (electroluminescent device from)

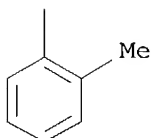
RN 131312-29-3 HCAPLUS

CN 1,4-Benzenediamine, N-[4-(5H-dibenzo[a,d]cyclohepten-5-ylidenemethyl)phenyl]-N,N'-bis(2-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

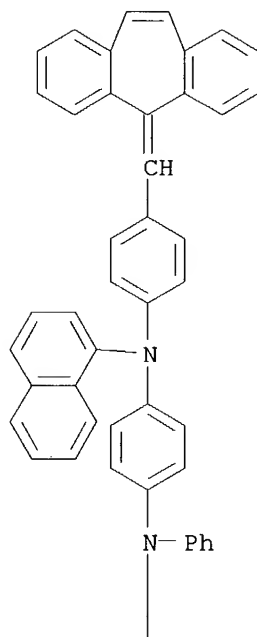


RN 156204-55-6 HCAPLUS

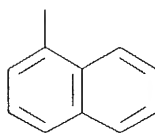
CN 1,4-Benzenediamine, N-[4-(5H-dibenzo[a,d]cyclohepten-5-ylidenemethyl)phenyl]-N,N'-di-1-naphthalenyl-N'-phenyl- (9CI) (CA INDEX NAME)



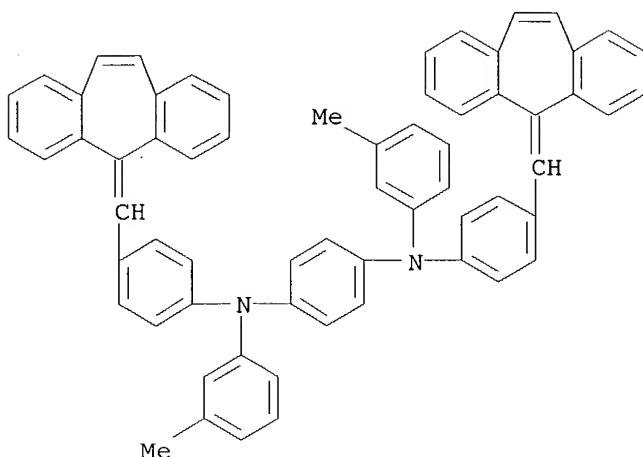
PAGE 1-A



PAGE 2-A

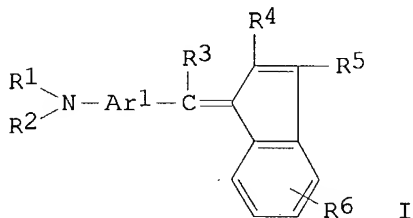


RN 156204-62-5 HCAPLUS  
CN 1,4-Benzenediamine, N,N'-bis[4-(5H-dibenzo[a,d]cyclohepten-5-ylidenemethyl)phenyl]-N,N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



L33 ANSWER 25 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1992:500652 HCAPLUS  
 DN 117:100652  
 ED Entered STN: 05 Sep 1992  
 TI Organic electroluminescent **device**  
 IN Ota, Masabumi; Onuma, Teruyuki; Kawamura, Fumio; Sakon, Hirota; Takahashi, Toshihiko  
 PA Ricoh Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS H05B033-14; H05B033-22  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03163184	A2	19910715	JP 1989-249493	19890926
PRAI	JP 1989-212590		19890818		
OS	MARPAT 117:100652				
GI					



AB The title **device**, suited for use in large area displays, comprises  $\geq 1$  organic compound thin-film layer sandwiched between a

cathode and an anode layer, wherein  $\geq 1$  of the organic compound layer(s) contains I (R1-6 = H, (un)substituted alkyl, carbocyclic or heterocyclic aromatic ring; R1-2 may form a ring; Ar1 = (un)substituted carbocyclic or heterocyclic aromatic ring). The **device** is fabricated readily by VPE, providing a durable, high-luminance, variable color-emitting **device**.

ST electroluminescence org variable color **device**

IT Electroluminescent devices

(variable visible color-emitting, containing organic thin-film layers and electron and hole transporters)

IT 15082-28-7 55034-79-2

RL: DEV (Device component use); USES (Uses)

(electroluminescent **device** from, as electron transport compound for light emitter)

IT 141138-56-9 141183-13-3 141183-14-4

RL: DEV (Device component use); USES (Uses)

(electroluminescent **device** from, as hole transport compound for light emitter)

IT 26895-92-1 125323-61-7 141138-54-7 141138-55-8

RL: DEV (Device component use); USES (Uses)

(electroluminescent **device** from, as light-emitter compound with electron and hole transport materials)

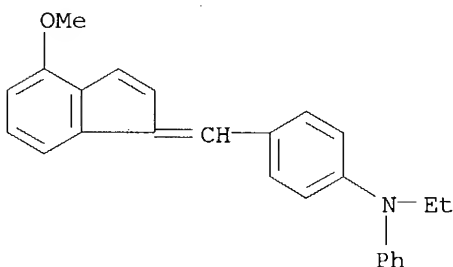
IT 141138-56-9 141183-13-3 141183-14-4

RL: DEV (Device component use); USES (Uses)

(electroluminescent **device** from, as hole transport compound for light emitter)

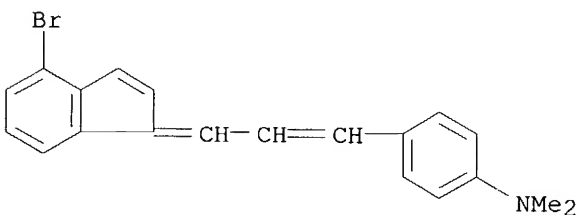
RN 141138-56-9 HCAPLUS

CN Benzenamine, N-ethyl-4-[(4-methoxy-1H-inden-1-ylidene)methyl]-N-phenyl- (9CI) (CA INDEX NAME)



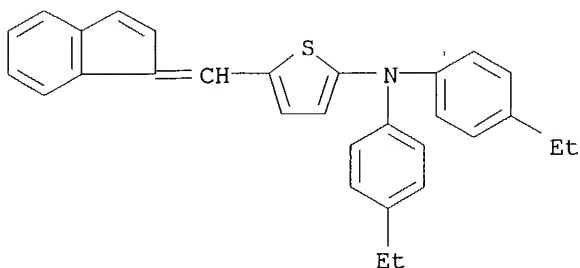
RN 141183-13-3 HCAPLUS

CN Benzenamine, 4-[3-(4-bromo-1H-inden-1-ylidene)-1-propenyl]-N,N-dimethyl- (9CI) (CA INDEX NAME)



RN 141183-14-4 HCAPLUS

CN 2-Thiophenamine, N,N-bis(4-ethylphenyl)-5-(1H-inden-1-ylidenemethyl)-  
(9CI) (CA INDEX NAME)

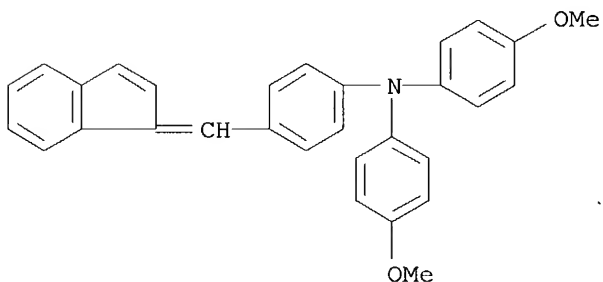


IT 125323-61-7 141138-54-7 141138-55-8

RL: DEV (Device component use); USES (Uses)  
(electroluminescent device from, as light-emitter  
compound with electron and hole transport materials)

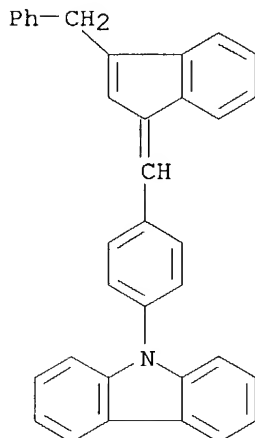
RN 125323-61-7 HCAPLUS

CN Benzenamine, 4-(1H-inden-1-ylidenemethyl)-N,N-bis(4-methoxyphenyl)- (9CI)  
(CA INDEX NAME)

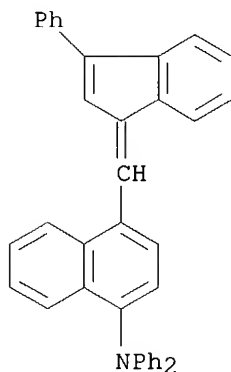


RN 141138-54-7 HCAPLUS

CN 9H-Carbazole, 9-[4-[[3-(phenylmethyl)-1H-inden-1-ylidene]methyl]phenyl]-  
(9CI) (CA INDEX NAME)

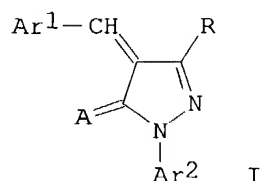


RN 141138-55-8 HCAPLUS  
 CN 1-Naphthalenamine, N,N-diphenyl-4-[(3-phenyl-1H-inden-1-ylidene)methyl]-  
 (9CI) (CA INDEX NAME)



L33 ANSWER 26 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1992:458371 HCAPLUS  
 DN 117:58371  
 ED Entered STN: 08 Aug 1992  
 TI Organic electroluminescent element  
 IN Ota, Masabumi; Onuma, Teruyuki; Kawamura, Fumio; Sakon, Hirota; Takahashi, Toshihiko  
 PA Ricoh Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS H05B033-14; H05B033-22  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 FAN.CNT 1  
 PATENT NO. KIND DATE APPLICATION NO. DATE

PI	JP 03163189	A2	19910715	JP 1990-191517	19900718
PRAI	JP 1989-219692		19890825		
OS	MARPAT 117:58371				
GI					



AB The title element, suited for use in large area displays, comprises  $\geq 1$  organic compound thin-film layer sandwiched between a cathode and an anode layer, wherein  $\geq 1$  of the organic compound layers) contains I (R = (un)substituted alkyl, hydroxy carbonyl, alkyloxy carbonyl, (un)substituted carbamoyl, (un)substituted carbocyclic or heterocyclic aromatic ring; A = O, Ar3-N; Ar1-3 = (un)substituted carbocyclic or heterocyclic aromatic ring). The element is fabricated readily by VPE, providing a durable, high-luminescence, variable color-emitting device.

ST electroluminescence org variable color device

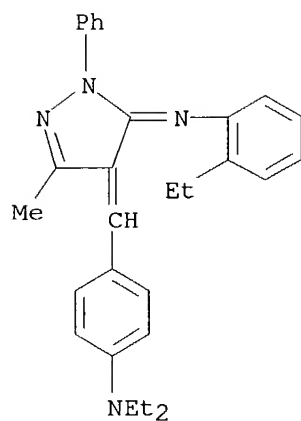
IT Electroluminescent devices  
(variable visible color-emitting)

IT 15082-28-7 26895-92-1 55034-79-2 **79926-38-8**  
**79926-41-3** 80165-63-5 **138996-98-2** 138996-99-3  
**138997-00-9** 138997-01-0 **138997-02-1**  
**138997-03-2** 138997-04-3 **138997-05-4**  
**138997-06-5** 138997-07-6 **138997-08-7**  
**138997-09-8** **138997-10-1** **139023-36-2**  
 RL: DEV (Device component use); USES (Uses)  
 (electroluminescent device from, as light emitter  
 and/or electron or hole transporter)

IT **79926-38-8** **79926-41-3** **138996-98-2**  
**138997-00-9** **138997-02-1** **138997-03-2**  
**138997-05-4** **138997-06-5** **138997-08-7**  
**138997-09-8** **138997-10-1** **139023-36-2**  
 RL: DEV (Device component use); USES (Uses)  
 (electroluminescent device from, as light emitter  
 and/or electron or hole transporter)

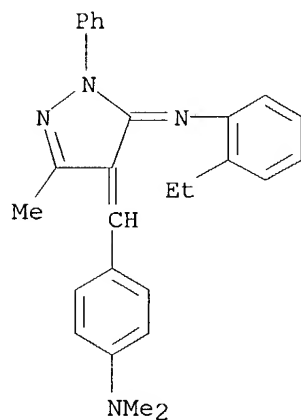
RN 79926-38-8 HCAPLUS

CN Benzenamine, N,N-diethyl-4-[[5-[(2-ethylphenyl)imino]-1,5-dihydro-3-methyl-1-phenyl-4H-pyrazol-4-ylidene]methyl]- (9CI) (CA INDEX NAME)



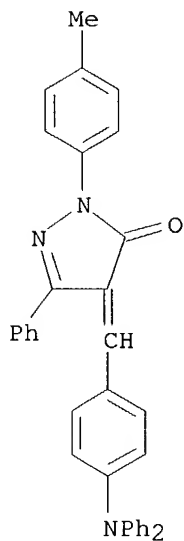
RN 79926-41-3 HCAPLUS

CN Benzenamine, 4-[[5-[(2-ethylphenyl)imino]-1,5-dihydro-3-methyl-1-phenyl-4H-pyrazol-4-ylidene]methyl]-N,N-dimethyl- (9CI) (CA INDEX NAME)



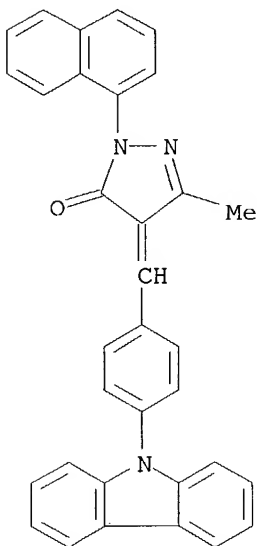
RN 138996-98-2 HCAPLUS

CN 3H-Pyrazol-3-one, 4-[[4-(diphenylamino)phenyl]methylene]-2,4-dihydro-2-(4-methylphenyl)-5-phenyl- (9CI) (CA INDEX NAME)



RN 138997-00-9 HCAPLUS

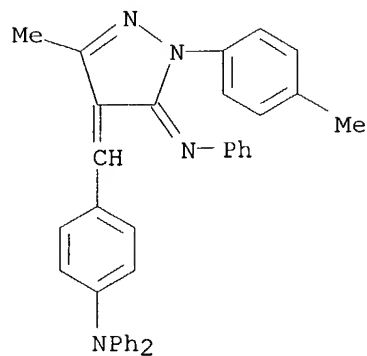
CN 3H-Pyrazol-3-one, 4-[[4-(9H-carbazol-9-yl)phenyl]methylene]-2,4-dihydro-5-methyl-2-(1-naphthalenyl)- (9CI) (CA INDEX NAME)



RN 138997-02-1 HCAPLUS

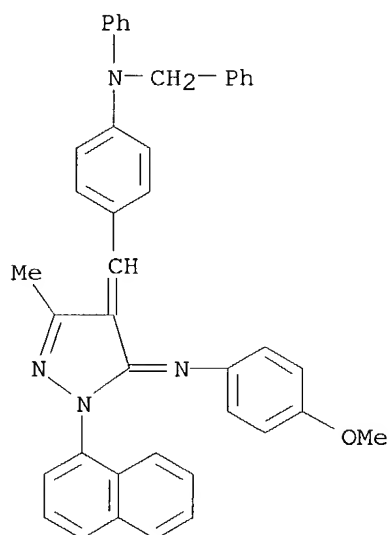
CN Benzenamine, 4-[[[1,5-dihydro-3-methyl-1-(4-methylphenyl)-5-(phenylimino)-4H-pyrazol-4-ylidene]methyl]-N,N-diphenyl]- (9CI) (CA INDEX NAME)





RN 138997-03-2 HCAPLUS

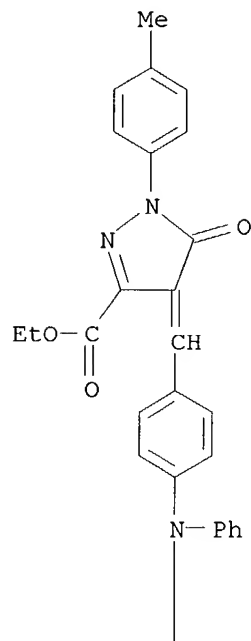
CN Benzenemethanamine, N-[4-[[1,5-dihydro-5-[(4-methoxyphenyl)imino]-3-methyl-1-(1-naphthalenyl)-4H-pyrazol-4-ylidene]methyl]phenyl]-N-phenyl- (9CI)  
(CA INDEX NAME)



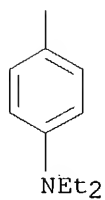
RN 138997-05-4 HCAPLUS

CN 1H-Pyrazole-3-carboxylic acid, 4-[[4-[[4-(diethylamino)phenyl]phenylamino]phenyl]methylene]-4,5-dihydro-1-(4-methylphenyl)-5-oxo-, ethyl ester (9CI)  
(CA INDEX NAME)

PAGE 1-A

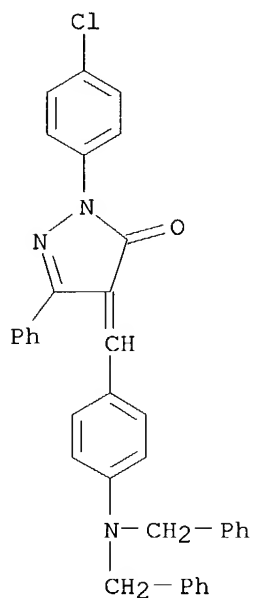


PAGE 2-A



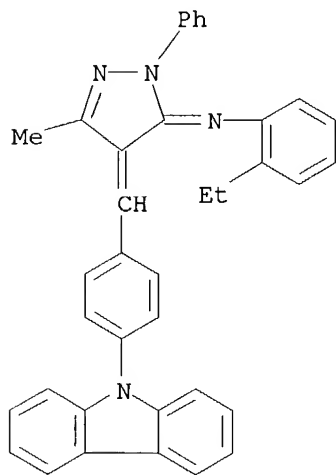
RN 138997-06-5 HCAPLUS

CN 3H-Pyrazol-3-one, 4-[[4-[bis(phenylmethyl)amino]phenyl]methylene]-2-(4-chlorophenyl)-2,4-dihydro-5-phenyl- (9CI) (CA INDEX NAME)



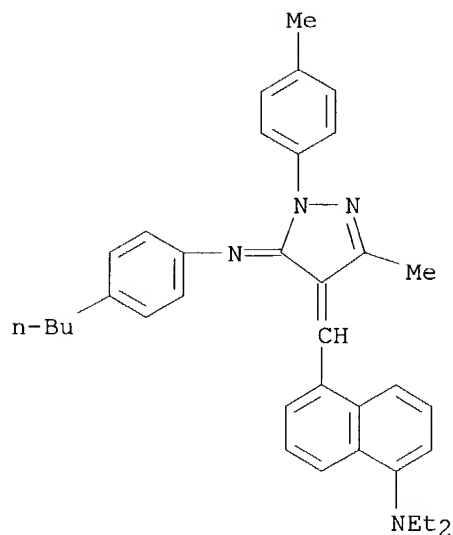
RN 138997-08-7 HCAPLUS

CN Benzenamine, N-[4-[[4-(9H-carbazol-9-yl)phenyl]methylene]-2,4-dihydro-5-methyl-2-phenyl-3H-pyrazol-3-ylidene]-2-ethyl- (9CI) (CA INDEX NAME)

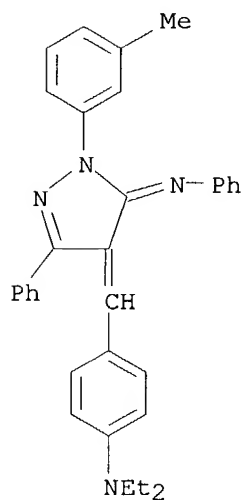


RN 138997-09-8 HCAPLUS

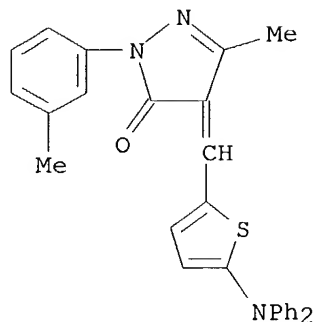
CN 1-Naphthalenamine, 5-[[5-[(4-butylphenyl)imino]-1,5-dihydro-3-methyl-1-(4-methylphenyl)-4H-pyrazol-4-ylidene]methyl]-N,N-diethyl- (9CI) (CA INDEX NAME)



RN 138997-10-1 HCAPLUS  
 CN Benzenamine, 4-[[1,5-dihydro-1-(3-methylphenyl)-3-phenyl-5-(phenylimino)-4H-pyrazol-4-ylidene]methyl]-N,N-diethyl- (9CI) (CA INDEX NAME)



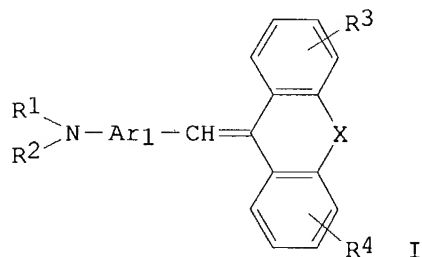
RN 139023-36-2 HCAPLUS  
 CN 3H-Pyrazol-3-one, 4-[[5-(diphenylamino)-2-thienyl]methylene]-2,4-dihydro-5-methyl-2-(3-methylphenyl)- (9CI) (CA INDEX NAME)



L33 ANSWER 27 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1992:184238 HCAPLUS  
 DN 116:184238  
 ED Entered STN: 03 May 1992  
 TI Organic electroluminescent **device**  
 IN Ota, Masabumi; Onuma, Teruyuki; Kawamura, Fumio; Sakon, Hirota; Takahashi, Toshihiko  
 PA Ricoh Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS H05B033-14  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

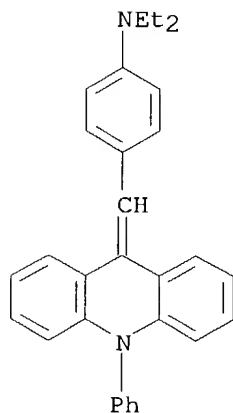
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03200889	A2	19910902	JP 1990-49796	19900228
	JP 2897138	B2	19990531		
	US 5093210	A	19920303	US 1990-544905	19900628
PRAI	JP 1989-168826		19890630		
	JP 1989-168827		19890630		
	JP 1990-49796		19900228		
OS	MARPAT 116:184238				
GI					

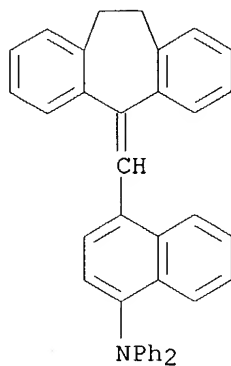


AB The **device**, suited for use in large-area displays, comprises

$\geq 1$  organic compound layer sandwiched between a pair of electrodes,  
 wherein  $\geq 1$  layer consists of  $R1R2NAr1(CH:CH)nAr2$  or I [R1-5 =  
 (un)substituted alkyl, carbocyclic aromatic ring, heterocyclic aromatic ring;  
 R1, R2 may form a ring; Ar1-2 = (un)substituted carbocyclic aromatic ring,  
 heterocyclic aromatic ring; n = 1-3; X = C2H4, CH:CH, O, S, NR5].  
 ST electroluminescent **device** org phosphor charge carrier  
 IT Phosphors  
 (electroluminescent organic compds.)  
 IT 15082-28-7  
 RL: PRP (Properties)  
 (electron-transporting layer from, for organic electroluminescent  
**device**)  
 IT 92003-02-6 137274-17-0 140188-74-5 140188-75-6 **140188-76-7**  
**140188-77-8 140188-78-9 140188-79-0**  
**140188-80-3**  
 RL: PRP (Properties)  
 (hole-transporting layer from, for organic **electroluminescent**  
**device**)  
 IT 91175-22-3 95304-32-8 **121488-22-0** 140188-64-3 140188-65-4  
 140188-66-5 140188-67-6 **140188-68-7 140188-69-8**  
**140188-70-1 140188-71-2 140188-72-3**  
**140188-73-4**  
 RL: PRP (Properties)  
 (light-emitting layer from, for organic **electroluminescent**  
**device**)  
 IT **140188-76-7 140188-77-8 140188-78-9**  
**140188-79-0 140188-80-3**  
 RL: PRP (Properties)  
 (hole-transporting layer from, for organic **electroluminescent**  
**device**)  
 RN 140188-76-7 HCAPLUS  
 CN Benzenamine, N,N-diethyl-4-[(10-phenyl-9(10H)-acridinylidene)methyl]-  
 (9CI) (CA INDEX NAME)

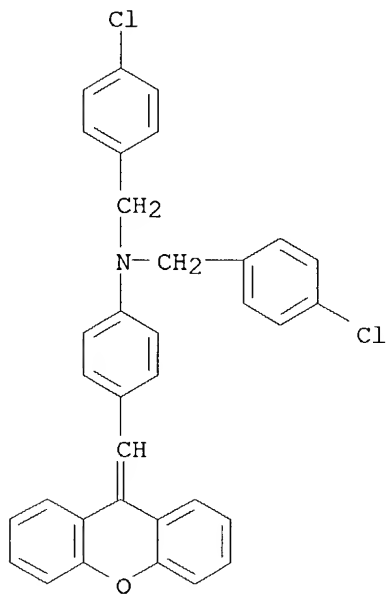


RN 140188-77-8 HCAPLUS  
 CN 1-Naphthalenamine, 4-[(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)methyl]-N,N-diphenyl- (9CI) (CA INDEX NAME)



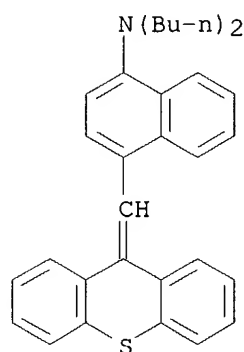
RN 140188-78-9 HCAPLUS

CN Benzenemethanamine, 4-chloro-N-[(4-chlorophenyl)methyl]-N-[4-(9H-xanthen-9-ylidenemethyl)phenyl]- (9CI) (CA INDEX NAME)

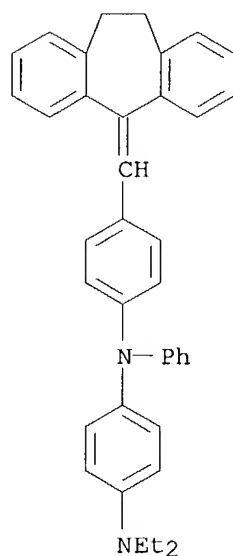


RN 140188-79-0 HCAPLUS

CN 1-Naphthalenamine, N,N-dibutyl-4-(9H-thioxanthen-9-ylidenemethyl)- (9CI)  
(CA INDEX NAME)



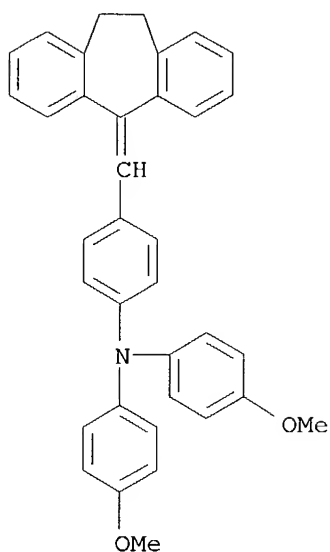
RN 140188-80-3 HCAPLUS  
 CN 1,4-Benzenediamine, N-[4-[(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)methyl]phenyl]-N',N'-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



IT 121488-22-0 140188-68-7 140188-69-8  
 140188-70-1 140188-71-2 140188-72-3  
 140188-73-4  
 RL: PRP (Properties)  
 (light-emitting layer from, for organic **electroluminescent device**)

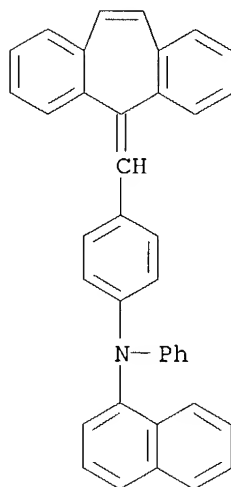
RN 121488-22-0 HCAPLUS  
 CN Benzenamine, 4-[(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)methyl]-N,N-bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)





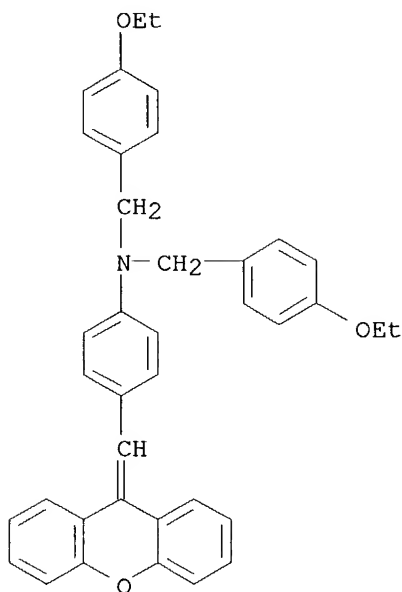
RN 140188-68-7 HCAPLUS

CN 1-Naphthalenamine, N-[4-(5H-dibenzo[a,d]cyclohepten-5-ylidenemethyl)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

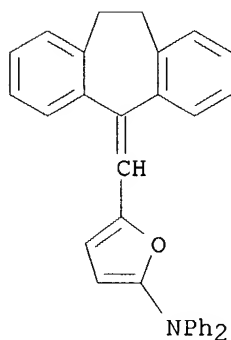


RN 140188-69-8 HCAPLUS

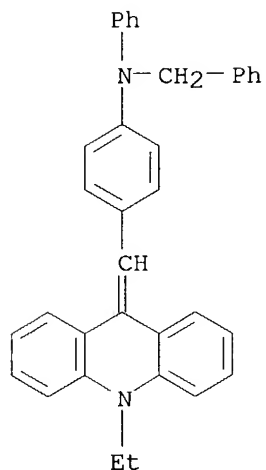
CN Benzenemethanamine, 4-ethoxy-N-[(4-ethoxyphenyl)methyl]-N-[4-(9H-xanthen-9-ylidenemethyl)phenyl]- (9CI) (CA INDEX NAME)



RN 140188-70-1 HCAPLUS  
 CN 2-Furanamine, 5-[(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)methyl]-N,N-diphenyl- (9CI) (CA INDEX NAME)

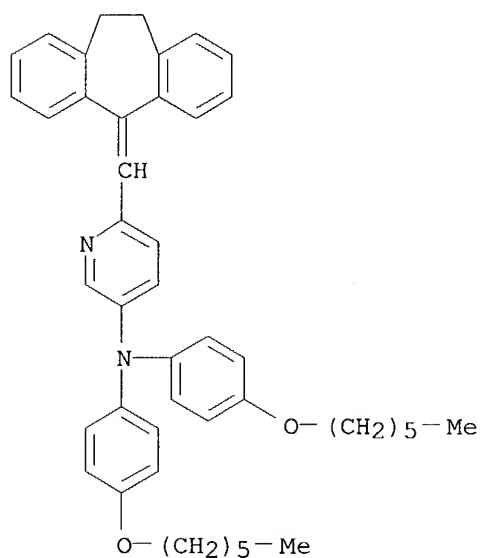


RN 140188-71-2 HCAPLUS  
 CN Benzenemethanamine, N-[4-[(10-ethyl-9(10H)-acridinylidene)methyl]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



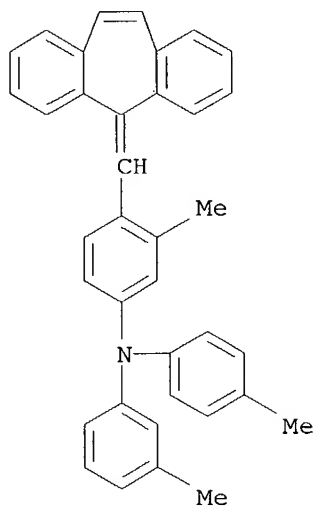
RN 140188-72-3 HCAPLUS

CN 3-Pyridinamine, 6-[(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)methyl]-N,N-bis[4-(hexyloxy)phenyl]- (9CI) (CA INDEX NAME)



RN 140188-73-4 HCAPLUS

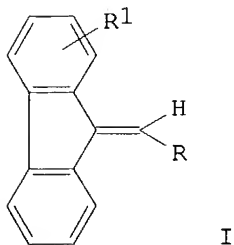
CN Benzenamine, 4-(5H-dibenzo[a,d]cyclohepten-5-ylidenemethyl)-3-methyl-N-(3-methylphenyl)-N-(4-methylphenyl)- (9CI) (CA INDEX NAME)



L33 ANSWER 28 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1992:95275 HCAPLUS  
 DN 116:95275  
 ED Entered STN: 06 Mar 1992  
 TI Organic thin-film electroluminescent **device**  
 IN Onuma, Teruyuki; Kawamura, Fumio; Ota, Masabumi; Sakon, Hirota; Takahashi, Toshihiko  
 PA Ricoh Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS H05B033-14  
 CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03079691	A2	19910404	JP 1989-214201	19890822
PRAI	JP 1989-214201		19890822		
OS	MARPAT 116:95275				
GI					



AB The title **device**, suited for use as a large-area panel light source, comprises an anode, a cathode, and a luminescent layer consisting of  $\geq 1$  organic thin film containing I [R = (un)substituted aromatic or heterocyclic residue; R1 = H, halo, CN, alkoxy, alkyl] sandwiched between the electrodes.

ST electroluminescent **device** org thin film

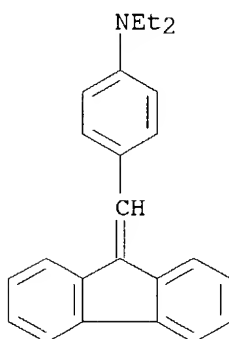
IT Electroluminescent devices  
(film, organic)

IT **88695-22-1**  
RL: USES (Uses)  
(thin-film **electroluminescent device** from)

IT **88695-22-1**  
RL: USES (Uses)  
(thin-film **electroluminescent device** from)

RN 88695-22-1 HCAPLUS

CN Benzenamine, N,N-diethyl-4-(9H-fluoren-9-ylidenemethyl)- (9CI) (CA INDEX NAME)



L33 ANSWER 29 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1992:71722 HCAPLUS

DN 116:71722

ED Entered STN: 21 Feb 1992

TI Organic electroluminescent **device**

IN Ota, Masabumi; Onuma, Teruyuki; Kawamura, Fumio; Sakon, Hirota; Takahashi, Toshihiko

PA Ricoh Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K011-06  
ICS H05B033-14; H05B033-22

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03174489	A2	19910729	JP 1989-249492	19890926
PRAI	JP 1989-212588		19890818		
OS	MARPAT 116:71722				
GI	For diagram(s), see printed CA Issue.				

AB The **device**, suited for use in large-area displays, comprises  $\geq 1$  organic compound thin-film layer sandwiched between a cathode and an anode layer, wherein  $\geq 1$  of the organic compound layer(s) contains I {R1,2 = H, (un)substituted alkyl, (un)substituted carbocyclic or heterocyclic aromatic ring, R1,2 may form a ring; Ar = (un)substituted carbocyclic or heterocyclic aromatic ring; X = N or :CH}. The **device** provides a stable, luminous light source.

ST electroluminescence **device** org film

IT Electroluminescent devices  
(containing organic light-emitting and carrier-transporting thin-film layers)

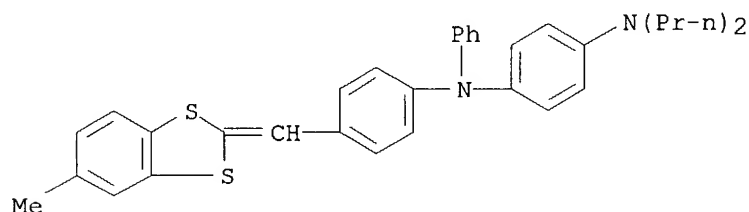
IT 138685-14-0 138685-15-1  
RL: DEV (Device component use); USES (Uses)  
(electroluminescent device from, as hole-transporting layer)

IT 138685-11-7 138685-12-8 138685-13-9 138704-51-5  
RL: DEV (Device component use); USES (Uses)  
(electroluminescent device from, as light-emitting thin-film layer)

IT 138685-15-1  
RL: DEV (Device component use); USES (Uses)  
(electroluminescent device from, as hole-transporting layer)

RN 138685-15-1 HCAPLUS

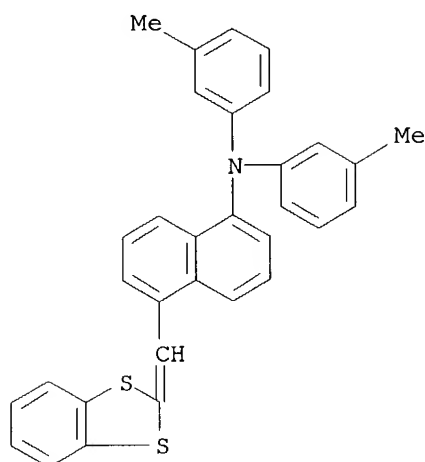
CN 1,4-Benzenediamine, N-[4-[(5-methyl-1,3-benzodithiol-2-ylidene)methyl]phenyl]-N-phenyl-N',N'-dipropyl- (9CI) (CA INDEX NAME)



IT 138685-12-8 138685-13-9  
RL: DEV (Device component use); USES (Uses)  
(electroluminescent device from, as light-emitting thin-film layer)

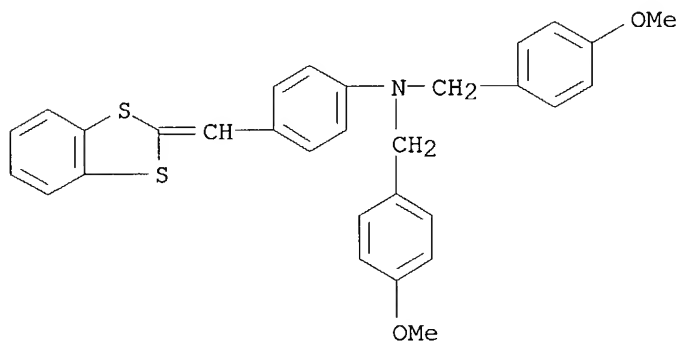
RN 138685-12-8 HCAPLUS

CN 1-Naphthalenamine, 5-(1,3-benzodithiol-2-ylidenemethyl)-N,N-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 138685-13-9 HCAPLUS

CN Benzenemethanamine, N-[4-(1,3-benzodithiol-2-ylidenemethyl)phenyl]-4-methoxy-N-[(4-methoxyphenyl)methyl]- (9CI) (CA INDEX NAME)



L33 ANSWER 30 OF 30 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1991:666363 HCAPLUS

DN 115:266363

ED Entered STN: 14 Dec 1991

TI Electroluminescent **device**

IN Onuma, Teruyuki; Sakon, Hirota; Hashimoto, Mitsuru

PA Ricoh Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K011-06

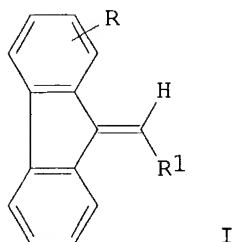
ICS H05B033-14

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03054290	A2	19910308	JP 1989-189344	19890721

PRAI JP 1989-189344 19890721  
GI



AB An electroluminescent **device** comprises  $\geq 1$  organic layer sandwiched between 2 electrodes, wherein  $\geq 1$  of the layers contains, as a hole-transporting material, a compound I (R = H, halogen, CN, alkoxy, alkyl; R1 = a (un)substituted aromatic or heterocyclic residue).

ST electroluminescent **device** hole transporting material

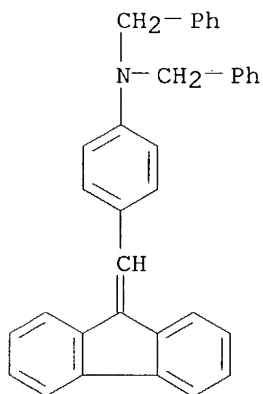
IT Electroluminescent devices  
(hole-transporting materials for)

IT 65272-89-1 77317-24-9 84678-60-4 88695-22-1  
115838-15-8 137638-39-2 137638-40-5  
137638-41-6  
RL: PRP (Properties)  
(hole-transporting material, for **electroluminescent device**)

IT 77317-24-9 84678-60-4 88695-22-1  
115838-15-8 137638-39-2 137638-41-6  
RL: PRP (Properties)  
(hole-transporting material, for **electroluminescent device**)

RN 77317-24-9 HCAPLUS

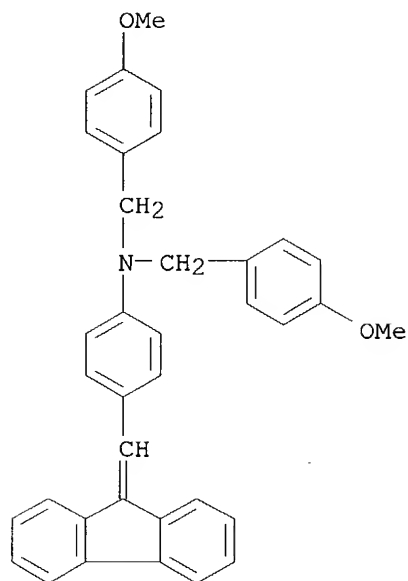
CN Benzenemethanamine, N-[4-(9H-fluoren-9-ylidenemethyl)phenyl]-N-(phenylmethyl)- (9CI) (CA INDEX NAME)



RN 84678-60-4 HCAPLUS

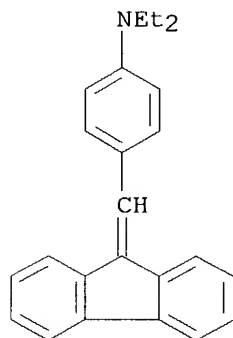
CN Benzenemethanamine, N-[4-(9H-fluoren-9-ylidenemethyl)phenyl]-4-methoxy-N-[(4-methoxyphenyl)methyl]- (9CI) (CA INDEX NAME)





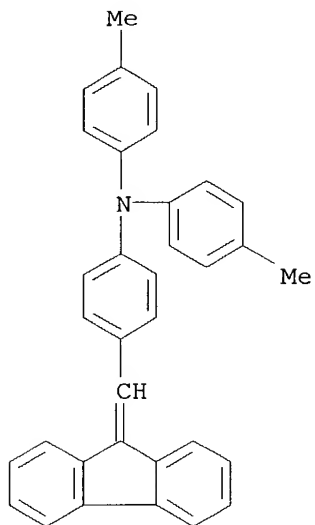
RN 88695-22-1 HCAPLUS

CN Benzenamine, N,N-diethyl-4-(9H-fluoren-9-ylidenemethyl)- (9CI) (CA INDEX NAME)



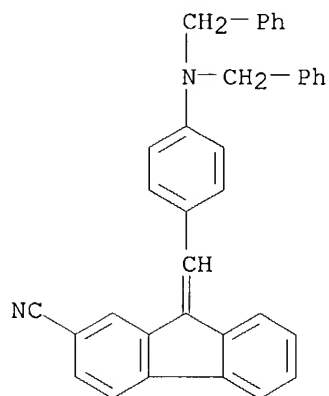
RN 115838-15-8 HCAPLUS

CN Benzenamine, 4-(9H-fluoren-9-ylidenemethyl)-N,N-bis(4-methylphenyl)- (9CI)  
(CA INDEX NAME)



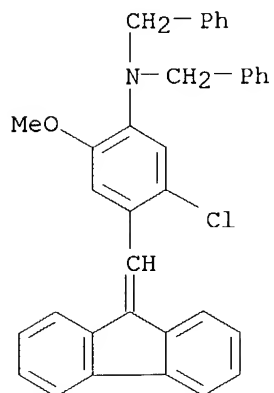
RN 137638-39-2 HCAPLUS

CN 9H-Fluorene-2-carbonitrile, 9-[[4-[bis(phenylmethyl)amino]phenyl]methylene]- (9CI) (CA INDEX NAME)



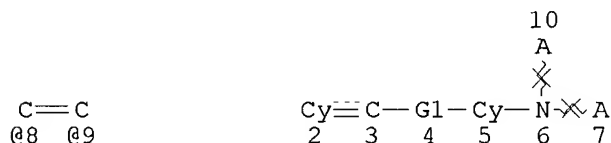
RN 137638-41-6 HCAPLUS

CN Benzenemethanamine, N-[5-chloro-4-(9H-fluoren-9-ylidenemethyl)-2-methoxyphenyl]-N-(phenylmethyl)- (9CI) (CA INDEX NAME)



=&gt; =&gt; D QUE

L22 7931 SEA FILE=HCAPLUS ABB=ON DEV/RL (L) ELECTROLUMINES?  
 L23 6143 SEA FILE=HCAPLUS ABB=ON DEVICE/IT (L) ELECTROLUMINES?/IT  
 L24 11353 SEA FILE=HCAPLUS ABB=ON L22 OR L23  
 L25 SEL L24 1- RN : 36260 TERMS  
 L26 36249 SEA FILE=REGISTRY ABB=ON L25  
 L27 STR



REP G1=(0-2) 8-3 9-5

NODE ATTRIBUTES:

NSPEC IS RC AT 6

NSPEC IS RC AT 7

NSPEC IS RC AT 10

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

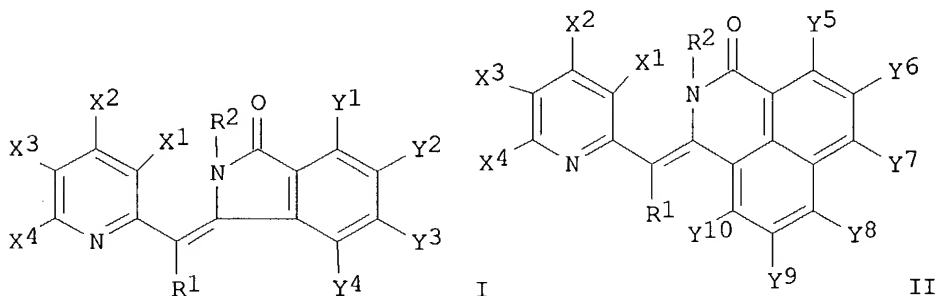
L29 105 SEA FILE=REGISTRY SUB=L26 SSS FUL L27  
 L31 6310 SEA FILE=HCAPLUS ABB=ON L29  
 L32 68 SEA FILE=HCAPLUS ABB=ON L31 (L) (EL OR ?LUMINESC?)  
 L33 30 SEA FILE=HCAPLUS ABB=ON L32 AND (DEVICE OR DEV/RL)  
 L39 11 SEA FILE=HCAPLUS ABB=ON L31 (L) LIGHT? (L) ?EMIT?  
 L40 11 SEA FILE=HCAPLUS ABB=ON L39 AND (DEVICE? OR DEV/RL)  
 L41 34 SEA FILE=HCAPLUS ABB=ON L33 OR L40  
 L42 4 SEA FILE=HCAPLUS ABB=ON L41 NOT L33

=&gt; D L42 ALL 1-4 HITSTR

L42 ANSWER 1 OF *NO* HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2002:921501 HCAPLUS  
 DN 138:9507  
 ED Entered STN: 04 Dec 2002  
 TI Pyridine-phthalimide condensation derivatives as color-converting materials and light-emitting **devices** using them  
 IN Totani, Yoshiyuki; Ishida, Tsutomu; Shimamura, Takehiko; Tanabe, Yoshimitsu; Nakatsuka, Masakatsu  
 PA Mitsui Chemicals Inc., Japan  
 SO Jpn. Kokai Tokkyo Koho, 38 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 ICS C08K005-3437; C08K005-37; C08K005-378; C08K005-45; C08L101-00; C09K009-02; G02B001-04; H05B033-12; H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 27

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002348568	A2	20021204	JP 2001-155040	20010524
PRAI	JP 2001-155040		20010524		
OS	MARPAT 138:9507				
GI					

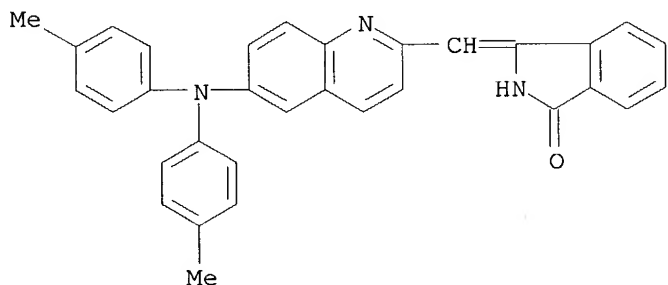


AB The color-converting materials are pyridine-phthalimide condensation derivs., preferably represented by I, II [R1-2 = H, (substituted) alkyl or aryl; X1-4, Y1-10 = H, substituents], their tautomeric compds., or their Zn complexes. The color-converting materials have high color conversion efficiency, durability, and long life. Also claimed are compns. containing  $\geq 1$  of the color-converting materials and  $\geq 1$  polymers, color-converting components obtained by molding the compns., and light-emitting **devices** using the components.

ST pyridine phthalimide condensation deriv color converting material; light emitting **device** pyridine phthalimide condensation durability

IT Epoxy resins, uses  
 Polycarbonates, uses  
 RL: **DEV (Device component use)**; TEM (Technical or engineered material use); **USES (Uses)**  
 (binder; pyridine-phthalimide condensation derivative as color-converting

- material with high durability for light-emitting **device**)
- IT Electric lamps  
Electroluminescent **devices**  
Optical filters  
Optical materials  
(pyridine-phthalimide condensation derivative as color-converting material with high durability for light-emitting **device**)
- IT 9011-14-7, Methyl methacrylate homopolymer 25068-38-6, Bisphenol A epoxy resin  
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)  
(binder; pyridine-phthalimide condensation derivative as color-converting material with high durability for light-emitting **device**)
- IT 13481-47-5 227938-10-5 477314-44-6  
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)  
(pyridine-phthalimide condensation derivative as color-converting material with high durability for light-emitting **device**)
- IT **477314-42-4**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(pyridine-phthalimide condensation derivative as color-converting material with high durability for **light-emitting device**)
- IT **477314-42-4**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(pyridine-phthalimide condensation derivative as color-converting material with high durability for **light-emitting device**)
- RN 477314-42-4 HCAPLUS
- CN 1H-Isoindol-1-one, 3-[[6-[bis(4-methylphenyl)amino]-2-quinolinyl]methylene]-2,3-dihydro- (9CI) (CA INDEX NAME)



- L42 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN
- AN 2002:638893 HCAPLUS
- DN 137:317580
- ED Entered STN: 25 Aug 2002
- TI Multiple surface plasmon excitations and a light emitting **device** of organic dye LB film
- AU Nakano, T.; Terakado, M.; Shinbo, K.; Kato, K.; Kaneko, F.; Wakamatsu, T.
- CS 1 Graduate School of Science and Technology, Niigata University, Niigata, 950-2181, Japan
- SO Proceedings of International Symposium on Electrical Insulating Materials, 3rd, Himeji, Japan, Nov. 19-22, 2001 (2001), 471-474 Publisher: Institute of Electrical and Electronics Engineers, Piscataway, N. J.

CODEN: 69CYSZ; ISBN: 4-88686-053-2

DT Conference

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Using the reverse irradiation in the Kretschmann configuration, emission light was observed for merocyanine (MC) LB films on Ag films. Based on the calculated

dispersion properties of surface plasmons, it was estimated that the emission light was caused by multiple excitations of SPs. It was hypothesized that the emission light from the heterofilm of MC and crystal violet (CV) was due to energy transfer from MC to CV mols. The phenomenon may prove useful for application to new luminescent **devices** and sensors.

ST cyanine dye Langmuir Blodgett film surface plasmon LED

IT ATR (attenuated total reflection)

Cyanine dyes

Electroluminescent **devices**

Langmuir-Blodgett films

Surface plasmon

(multiple surface plasmon excitations and a light emitting **device** of organic dye LB film)

IT 548-62-9, Crystal Violet 75983-37-8

RL: PRP (Properties)

(multiple surface plasmon excitations and a **light emitting device** of organic dye LB film)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

(1) Anon; Surface Polaritons 1982

(2) Baba, A; Jpn J Appl Phys 1998, V37, P2581 HCAPLUS

(3) Casalini, R; Sensors and Actuators B 1999, V57, P28

(4) Fukami, T; Mol Cryst Liq Cryst 1999, V327, P103 HCAPLUS

(5) Kaneko, F; Thin Solid Films 1996, V284-285, P417 HCAPLUS

(6) Kato, K; 9th Int Conf on Organized Molecular Films VI(T183), P246

(7) Kato, K; Jpn J Appl Phys 1996, V35, P5466 HCAPLUS

(8) Kume, T; Materials Science & Engineering 1996, VA217/218, P171 HCAPLUS

(9) Nakano, T; Mol Cryst Liq Cryst 2000, V349, P235 HCAPLUS

(10) Nakano, T; Trans IEE of Japan 2001, V121-A, P683

(11) Shinbo, K; Trans IEE Japan 2000, V118-A, P71

(12) Shinbo, K; proc of The 9th Int Conf on Organized Molecular Films 2000, V1, P185

(13) Wakamatsu, T; Jpn J Appl Phys 1997, V36, P155 HCAPLUS

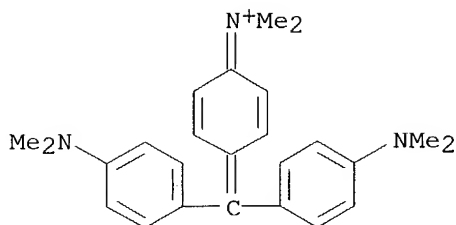
IT 548-62-9, Crystal Violet

RL: PRP (Properties)

(multiple surface plasmon excitations and a **light emitting device** of organic dye LB film)

RN 548-62-9 HCAPLUS

CN Methanaminium, N-[4-[bis[4-(dimethylamino)phenyl]methylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, chloride (9CI) (CA INDEX NAME)



● Cl<sup>-</sup>

L42 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:83140 HCAPLUS  
 DN 132:138460  
 ED Entered STN: 03 Feb 2000  
 TI Electrically-active, light-emitting polymers forming films from solution  
 IN Hoerhold, Hans-Heinrich; Raabe, Dietrich; Helbig, Manfred  
 PA Germany  
 SO Ger. Offen., 18 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 IC ICM C08G061-12  
 ICS C08G073-02; C08L079-02  
 CC 38-3 (Plastics Fabrication and Uses)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19832943	A1	20000203	DE 1998-19832943	19980722
PRAI	DE 1998-19832943		19980722		

AB The title polymers contain repeating arylenediamine units of specified structure. Stirring 9 mmol  $\alpha,\alpha'$ -diphenyl-1,4-benzenedimethanol and 10 mmol N,N'-bis(3-methylphenyl)-N,N'-diphenylbenzidine in 80 mL POCl<sub>3</sub> at room temperature for 30 min and at 45° for 90 min gave 70% colorless polymer with weight-average mol. weight 47,700. The spectral and elec. properties. of the polymer are described.

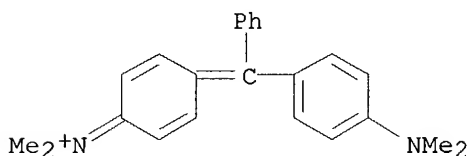
ST elec active light emitting polymer; polyamine arom light emitting; diphenylbenzenedimethanol copolymer light emitting; benzidine deriv copolymer light emitting; film polymer light emitting

IT Polyamines  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (aromatic; elec.-active, light-emitting polymers forming films from solution)

IT Electrical materials  
 Electroluminescent **devices**  
 Plastic films  
 (elec.-active, light-emitting polymers forming films from solution)

IT 256523-99-6P 256524-00-2P 256524-01-3P 256524-02-4P 256524-03-5P  
 256524-04-6P 256524-05-7P 256524-06-8P 256524-07-9P 256524-08-0DP,  
 alkyl ethers 256524-09-1P 256524-10-4P  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(elec.-active, light-emitting polymers forming films from solution)  
 IT 129-79-3 **569-64-2**, Malachite green 78991-05-6  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (sensitizer; elec.-active, **light-emitting** polymers forming films from solution)  
 IT **569-64-2**, Malachite green  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (sensitizer; elec.-active, **light-emitting** polymers forming films from solution)  
 RN 569-64-2 HCAPLUS  
 CN Methanaminium, N-[4-[[4-(dimethylamino)phenyl]phenylmethylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, chloride (9CI) (CA INDEX NAME)



● Cl<sup>-</sup>

L42 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1998:600118 HCAPLUS  
 DN 129:295973  
 ED Entered STN: 22 Sep 1998  
 TI Electric-field light-emitting **device** containing distyryl compound  
 IN Ueda, Hideaki; Furukawa, Keiichi; Terasaka, Yoshihisa  
 PA Minolta Camera Co., Ltd., Peop. Rep. China  
 SO Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K011-06  
 CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10245549	A2	19980914	JP 1997-51459	19970306
PRAI	JP 1997-51459		19970306		

OS MARPAT 129:295973

AB The **device** contains a pos.-hole injecting electrode and an electron-injecting electrode sandwiching an organic thin film layer containing an

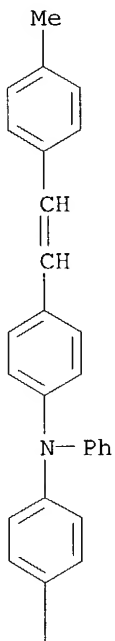
organic light-emitting layer having a distyryl compound  
 Ar3CH:CHAr1NR1Ar2CH:CAr4Ar5 (Ar1, 2 = divalent aromatic hydrocarbon; R1 = alkyl, aralkyl, aryl; Ar3 = alkyl, aralkyl, alkenyl, alkoxy, aryloxy, thioalkyl, arylthio, aryl, heterocyclic; Ar4, 5 = alkyl, aralkyl, aryl, heterocyclic; Ar4 and Ar5 may bond to form a ring). The **device** shows high luminance and efficiency and durability.

ST elec field light emitting **device**; electroluminescent

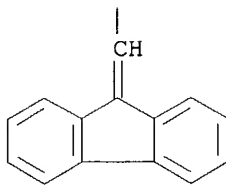


**device** distyryl compd high luminance; styryl compd  
electroluminescent **device**  
IT Electroluminescent **devices**  
(distyryl compound-containing elec.-field light-emitting **device**  
with high luminance)  
IT 127446-76-8 144946-89-4 145568-92-9 **146949-55-5**  
214339-41-0 214339-42-1 214339-43-2 214339-44-3 214339-45-4  
214339-46-5 214339-47-6 214339-48-7  
RL: **DEV (Device component use)**; MOA (Modifier or additive use);  
USES (Uses)  
(distyryl compound-containing elec.-field **light-emitting**  
**device** with high luminance)  
IT **146949-55-5**  
RL: **DEV (Device component use)**; MOA (Modifier or additive use);  
USES (Uses)  
(distyryl compound-containing elec.-field **light-emitting**  
**device** with high luminance)  
RN 146949-55-5 HCAPLUS  
CN Benzenamine, 4-(9H-fluoren-9-ylidenemethyl)-N-[4-[2-(4-  
methylphenyl)ethenyl]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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